Kirkwood Community College
2012-2013 Catalog

COUNSELOR / ADVISOR EDITION

Start Here.
Go Anywhere!

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General Information

Start Here. Go Anywhere!

With global vision and innovative curriculum, Kirkwood is redefining the role of the community college. At Kirkwood, you really can start here and go anywhere!

Our Mission

Consistent with the philosophy held by the college and in accordance with the charge given it by the State of Iowa as an institution of higher education and in concert with other agencies:

Kirkwood Community College

- Identifies community needs
- Provides accessible, quality education and training
- Promotes opportunities for lifelong learning

Our Vision

Invent, develop and deliver learning solutions for the 21st century.

Our Beliefs

- Trust and honesty
- Mutual respect and support
- Open communication
- Dedication to the people we serve

Equal Employment Opportunity

Kirkwood Community College declares and affirms to its students, employees and to the public that is does not discriminate on the basis of sex, race, color, creed, religion, national origin, age, sexual orientation, gender, gender identity, physical attributes, physical or mental ability, marital status, veteran status, genetic information, or socioeconomic status in its educational programs, activities, admission procedures or employment practices. The college affirms its commitment to comply with all applicable federal, state, and local laws, regulations and orders.

Kirkwood Locations

Cedar Rapids Main Campus

6301 Kirkwood Boulevard SW
Cedar Rapids, IA 52404
319-398-5411 or 800-332-2055

infocenter@kirkwood.edu

The main campus of Kirkwood Community College is located in Cedar Rapids, Iowa, a metropolitan area of approximately 150,000 residents. U.S. Highways 30, 151, 218 and Interstate 380 run through the city. Kirkwood sits just south of the Highway 30 and I-380 interchange.

Iowa City Campus

1816 Lower Muscatine Road
Iowa City, IA 52240
319-887-3658

Kirkwood Community College's Iowa City Campus brings academic excellence, first class facilities and a convenient location together to serve its growing student population.

The Iowa City Campus is one of the fastest-growing campuses in Iowa. And even though more than 3,500 students attend there, the center hasn't lost the friendliness and student focus for which Kirkwood is known.

Services include those listed for center locations, as well as academic and transfer advising, personal counseling, financial aid advising, a cashier for tuition payment and a full-service bookstore.

Center Locations

Kirkwood centers are located in Benton, Cedar, Iowa, Johnson, Jones, Linn and Washington counties. Kirkwood centers offer college credit courses, continuing education classes and high school completion programs to students of all ages. Students can complete all the required courses to earn Associate of Arts degrees through local Kirkwood centers. Classes at each center are delivered by traditional face-to-face classroom instruction, Distance Learning and interactive video classrooms.

The centers offer the same services as those available to students at the main campus in Cedar Rapids:

- Advisors who assist students with course schedules.
- COMPASS testing for math and English placement.
- Counseling workshops for anyone thinking about college or career changes.
- Wireless computer access with software required for college credit courses.
- Tutoring for students in college credit classes.

Benton County

Benton County Center
111 West Third Street
Vinton, IA 52349
319-472-2318

Tippie-Mansfield Center
1214 Ninth Avenue
Belle Plaine, IA 52208
319-444-2549

Cedar County

Cedar County Center
1410 Cedar Street
Tipton, IA 52772
563-886-3101

Cedar County Resource Center
401 West Ninth Street
Tipton, IA 52772
563-886-3451 ext. 5791

Iowa County

Iowa County Center
200 West Street
Williamsburg, IA 52361
319-668-2461

Johnson County

Iowa City Campus
1816 Lower Muscatine Road
Iowa City, IA 52240
319-887-3658

Iowa City Learning Center
1810 Lower Muscatine Road
Iowa City, IA 52240
319-887-3656

Jones County

Jones Regional Center - Jones County
220 Welter Drive
Monticello, IA 52310
319-465-2302

Linn County

Linn County Regional Center
1770 Boyson Road
Hiawatha, Iowa 52233
319-398-4491

Resource Center
1030 Fifth Avenue SE
Cedar Rapids, IA 52403
319-398-1050

Washington County

Washington County Center
111 Westview Drive
Washington, IA 52353
319-653-4655

Programs of Study

For the most up-to-date list of programs offered at Kirkwood, go to:
http://www.kirkwood.edu/programs
http://www.kirkwood.edu/programs

Career Programs

Get a great start here with certificate, diploma or degree programs designed to provide the training and expertise you need to begin your new career in as little as one year. Listed below are applied science career programs.

- Accounting
- Administrative Assistant
- Advanced Manufacturing Engineering Technologies
- Agricultural Geospatial Technology
- Agriculture Business
- Agriculture Production Management
- Apparel Merchandising
- Architectural Technology
- Automotive Collision Repair
- Automotive Technology
- Bakery and Pastry Arts
- Biotechnology
- CAD/Mechanical Engineering Technology
- Carpentry
- CNC Machining Technology
- Computer Information Systems
- Computer Support Specialist
- Construction Management
- Culinary Arts
- Dental Assisting
- Dental Hygiene
- Dental Technology
- Diesel Ag Technology
- Diesel Truck Technology
- Diagnostic Assistant (Radiologic Technology)
- Early Childhood Education
- Electroneurodiagnostic Technology
- Electronics Engineering Technology
- Energy Production and Distribution Technologies
- Entry-level Firefighter
- Financial Services
- Floral Careers
- Geographic Information Systems
- Golf Course and Athletic Turfgrass Management
- Graphic Communication Technology
- Health Information Technology
- Horse Science Technology
- Hotel Management
- Humane Officer Training
- HVAC Installer
- Industrial Maintenance and HVAC Technology
- Interior Design
- Landscape Construction and Design
- Local Area Network (LAN) Management
- Management
- Marketing Management
- Masonry Construction
- Medical Assisting
- Medical Laboratory Technology
- Medical Transcription
- Nursing Practical, Associate Degree (RN)
- Occupational Therapy Assistant
- Paramedic
- Parks and Natural Resources
- Pet Grooming/Pet Shop Management
- Pharmacy Technician
- Physical Therapist Assistant
- Plumbing Technology
- Respiratory Therapist
- Restaurant Management
- Skilled Trades
- Surgical Technology
- Telecommunication Technology
- Veterinary Assistant
- Veterinary Technician
- Water Environmental Technology
- Web Technologies
- Welding

Liberal Arts Degrees

If you plan to continue your education after Kirkwood, you can take the necessary electives and core courses you need through our Liberal Arts program before your transfer.

The following career interest areas are Liberal Arts transfer options. Depending upon your transfer institution and your career interest area, you may earn an Associate of Arts or an Associate of Science degree in Liberal Arts, or you may take only the credits you need to transfer.

Liberal Arts - Associate of Arts (A.A.) degree

We can help you transfer your A.A. degree and major in many areas, including:

- Art
- Business
- Communications Media/Public Relations
- Computer Science
- Criminal Justice
- Early Childhood Education
- Economics
- Education Careers
- English
- Human Services
- Music
- Paralegal
- Philosophy
- Physical Education
- Political Science
- Psychology
- Religious Studies
- Sign Language Interpreter Training
- Sociology
- Theatre

Liberal Arts - Associate of Science (A.S.) degree

We can help you transfer your A.S. degree and major in many areas, including:

- Agriculture
- Biology
- Biotechnology
- BSN (Nursing)
- Chemistry
- Chiropractic Medicine
- Dentistry
- Engineering
- Environmental Science
- Mathematics
- Medicine
- Pharmacy
- Physical Therapy
- Physics
- Veterinary Medicine

Career Transfer Programs

The following programs include both technical courses in your career area

and general education courses that transfer to four-year colleges and universities.

Business Administration

Business Administration - ONLINE

Certificates

Certificate programs are designed for entry-level employment and may provide specialization in specific areas. Courses are usually taken from diploma and degree programs, and may be completed within 12 to 18 semester hours.

Biotechnology
Combination Welding
Construction Estimator
Construction Supervision
Entrepreneurship
Entry-level Firefighter
Fire Science
Geographic Information Systems
Human Resources
http://www.kirkwood.edu/site/index.php?p=9598
Java Programming
Local Area Network (LAN) Management
Network Security
.Net Programming
Paraeducator Certification**
Pipe Welding
Project Management
Retail Marketing
Sales
Shielded Metal Arc Welding
Technical Accounting
Web Development and Design

**For Paraeducator certification, apply to Liberal Arts - Associate of Arts (A.A.)

Online Degrees

Earn any of these degrees online. The Associate of Arts or Associate of Applied Science degree you earn is equivalent to a traditional classroom degree. Enter the workforce or transfer to a four-year school, the choice is yours The Health Information Technology does require an on-site clinical.

Business Administration
Liberal Arts
Management
Water Environmental Technology

Degrees and Core Requirements

Associate of Arts (A.A.)
Associate of Science (A.S.)

A.A. and A.S. degrees are generally considered "transfer level" degrees. Most students earning these degrees transfer to a four-year college or university and continue their studies. Requirements will differ between colleges, so students should work closely with their transfer institutions and Kirkwood advisors to choose classes that meet their needs.

Associate of Applied Science (A.A.S.)

Students who earn A.A.S. degrees typically enter the workforce, however, some Applied Science and Technology programs also have transfer agreements with four-year institutions. Students work with an advisor to determine which degree program best suits their goals.

Associate of Science/Career Option (A.S./C.O.)

The A.S./C.O. degree programs include both technical courses in career interest areas and general education courses that may transfer. After graduation, students have the option of starting their careers or transferring to a four-year school.

Diploma (D)
Certificate (C)

Diploma and certificate programs normally take nine to 12 months to complete and provide entry-level skills to begin a chosen career. Those in the workforce who already have two- or four-year degrees may also seek certificates to advance their careers. Diploma and certificate programs generally do not transfer, but it is best to check with an advisor.

A.A., A.S. or A.S./C.O. Degree Requirements

The adjacent table provides degree requirements for students pursuing a two-year transfer program at Kirkwood.

Additional requirements of the three programs include:

- Earn a minimum of 62 semester hours of credit.
- Complete 16 semester hours in residence at Kirkwood.
- Maintain a minimum cumulative grade point average of 2.0.
- Students seeking an A.A. degree must complete one approved diversity course.
- Students seeking an A.S./C.O. degree must successfully complete Elementary Algebra or achieve a placement test score at the Intermediate Algebra level or above.

Electives

Electives are transferable courses required for completing all three Arts and Sciences degrees. They go beyond core and general education requirements in providing an opportunity to pursue subjects of special interest.

Electives can be chosen from:

- All courses with "Arts & Sciences Elective Code A" in the course description (transfer courses).
- Up to 16 credit hours of courses with "Arts & Sciences Elective Code B" in the course description (technical courses).
- Only two credit hours of courses with "Arts & Sciences Elective Code D" in the course description (developmental courses).

Students in Career Options or special programs may be required to take specific courses to satisfy their program requirements.

A.A.S. Degree Requirements

To receive an Associate of Applied Science degree, the following requirements must be completed:

- Earn 62-86 semester hours of credit in the courses required for the specific Applied Science program.
- Earn 16 semester hours in residence at Kirkwood in the program for which the degree is sought.
- Maintain a minimum cumulative grade point average of 2.0.

- Complete a minimum of 15 semester credit hours of course work in the following basic learning core:

Communication	2 courses
Humanities	1 course
Social Science	1 course
Mathematics/Science	1 course

All basic core learning requirements can be satisfied from courses with Arts & Sciences Elective Code B in the course description (technical courses) or Arts & Sciences Elective Code A in the course description (transfer courses).

Degree Requirements

	Associate of Arts (A.A.)	Associate of Science (A.S.)	Associate of Science/Career Option (A.S./C.O.)	Associate of Applied Science (A.A.S.)
	credit hours			
Communication – Writing	5	5	5	
Communication – Speech	3	3	3	
Communication				6
Humanities	9			
Humanities and/or History-Cultures		9	6	3
History-Cultures	6			
Social Science	9	6	6	3
Mathematics	3			
Science	6			
Mathematics/Science		20	6	3
Program specific courses			20	47-71
Electives	21	19	16	
Degree Total	**62**	**62**	**62**	**62-86**

Diploma Requirements

- Earn 30-48 semester hours of credit in the courses required for the specific Applied Science program (for Arts & Sciences diploma programs, check the appropriate department for specific requirements).
- Earn eight semester hours in residence at Kirkwood in the program for which the diploma is sought.
- Maintain a minimum cumulative grade point average of 2.0.

Certificate Requirements

- Earn 12-18 semester hours of credit in courses required for the specific Applied Science program (for Arts & Sciences certificate programs, check the appropriate department for specific requirements).
- Earn six semester hours in residence at Kirkwood in the program for which the certificate is sought.

Maintain a minimum cumulative grade point average of 2.0.

Career Programs

Accounting

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)
Technical Accounting certificate is also available. See advisor for information.

Kirkwood Community College offers several options for students interested in accounting careers. This program provides students with the background they need to enter general accounting, cost accounting, finance, credit or other specialized areas of financial accounting and financial reporting. A degree in accounting provides students with a variety of options and opportunities.

Career opportunities: accounting clerks, cost accounting, general accounting, governmental accounting, internal accounting, office managers, payroll clerks.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
ACC-152	Financial Accounting	4
CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
MAT-140	Finite Math	3
-------	Elective	3
		16
Second Semester		
ACC-156	Managerial Accounting	4
ACC-191	Financial Analysis	3
ACC-313	Accounting Applications	4
ENG-108	Composition II: Technical Writing	3
		14
Third Semester		
ACC-222	Cost Accounting	4
ACC-231	Intermediate Accounting I	4
ACC-265	Income Tax Accounting	4
ACC-362	Accounting Spreadsheets	4
		16
Fourth Semester		
ACC-232	Intermediate Accounting II	4
ACC-491	Accounting Capstone	3
ECN-130	Principles of Microeconomics	3
SPC-101	Fundamentals of Oral Communication	3
-------	Elective	3
		16
Total program credit hours		**62**

Technical Accounting Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
ACC-152	Financial Accounting	4
CSC-110	Introduction to Computers	3
		7
Second Semester		
ACC-313	Accounting Applications	4
ACC-362	Accounting Spreadsheets	4
		8
Total program credit hours		**15**

Administrative Assistant

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)
Office Assistant diploma option
1 year (2 semesters)

This program prepares graduates to become members of the executive team in today's fast-paced business environment. It includes in-depth instruction in computer applications (word processing, desktop publishing, multimedia) and essential workplace "soft skills" (teamwork, project development, problem-solving).

Career opportunities: executive assistant, administrative assistant, office manager, information coordinator, communications facilitator and telecommuting coordinator.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
ADM-176	Electronic Records System	3
BCA-136	Advanced Word Processing	3

BCA-179	PowerPoint Multimedia	3
BUS-190	Professionalism: BPA	1
COM-710	Basic Communications	3
OR		
ENG-105	Composition I	
MGT-145	Human Relations in Management	3
		16

Second Semester

ADM-133	Business Math and Calculators	3
ADM-163	Office Concepts and Procedures	3
ADM-165	Information Processing	3
BCA-138	Advanced Word Processing Applications	3
BCA-205	Database/Spreadsheets	3
BUS-190	Professionalism: BPA	1
		16

Third Semester

ACC-111	Introduction to Accounting	3
ADM-142	Desktop Publishing	3
ADM-164	Administrative Office Applications	3
BUS-185	Business Law I	3
-------	Humanities elective	3
		15

Fourth Semester

ADM-154	Business Communication	3
OR		
ENG-106	Composition II	3
ADM-187	Administrative Assistant Capstone	1
BUS-290	Employment Search/Workplace Success	1
BUS-932	Internship	3
MGT-158	Office Supervision and Management	3
-------	Business/Computer elective	4
		15

Total program credit hours **62**

Office Assistant Diploma Requirements

First Semester

ADM-176	Electronic Record System	3
BCA-136	Advanced Word Processing	3
BCA-179	PowerPoint Multimedia	3
BUS-190	Professionalism: BPA	1
COM-710	Basic Communications	3
OR		
ENG-105	Composition I	
MGT-145	Human Relations in Management	3
		16

Second Semester

ADM-133	Business Math and Calculators	3
ADM-154	Business Communication	3
OR		
ENG-106	Composition II	3
ADM-163	Office Concepts and Procedures	3
ADM-165	Information Processing	3
BCA-205	Database/Spreadsheets	3
BUS-290	Employment Search/Workplace Success	
		16

Total diploma program credit hours **32**

Advanced Manufacturing Engineering Technologies

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)

Create next generation spacecraft or build a one-of-a-kind renewable energy system. Kirkwood's unique and challenging program could earn you an exciting and high demand career in advanced manufacturing. By blending engineering, computerized machining and fabrication, robotics welding, and quality assurance into one program, you're earning a flexible degree with many options.

Graduates of this program can go on to complete a four-year degree at UNI.

Career opportunities: precision metal fabricator, AutoCAD designer, robotic welding operator.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CAD-300	AutoCAD for Applied Engineering	2
CAD-310	Inventor for Applied Engineering	1
DRF-141	Engineering Drawings	2
IND-155	Microcomputer Applications	2
OR		
CSC-110	Introduction to Computers	3
MAT-745	Technical Mathematics I	4
PHY-190	Physics I	3
WEL-370	Production Mig Welding	4
		18
Second Semester (Spring)		
EGT-125	Applied Statics	4
ELT-304	Introduction to Electrical Circuits	4
MFG-279	CNC Machine Operations	4
MFG-283	Laser Operations	2
MFG-285	Applied Metallurgy	2
		16
Summer Term		
MFG-281	CNC Punch Press Operations	2

MFG-420	Jig and Fixture Design	4
MFG-500	Statistical Process Control	1
WEL-360	Production TIG Welding	4
-------	Communication electives	3
		14

Third Semester (Fall)

CAD-230	Geometric Dimensioning & Tolerancing	2
EGT-124	Strength of Materials	4
ELT-179	Electronic Board Soldering	1
MFG-287	Shear and Press Brake Operations	3
MFG-288	Water Jet Operations	2
-------	Humanities Elective	3
-------	Social Science Elective	3
		18

Fourth Semester (Spring)

ATR-200	Fanuc Programming for Robotic Welding	2
BUS-280	Fundamentals of Lean Process Improvement	3
EGT-188	Design Problems	4
MFG-289	Automated Production Methods for AMET	3
WEL-710	Robotic Welding	3
-------	Communication Elective	3
		18

Total program credit hours **84**

Agricultural Geospatial Technology

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

Agricultural Geospatial Technology students prepare to work in the emerging geospatial technology industry. Kirkwood's program is one of only a handful of precision agriculture programs in the nation and provides specialization in dealership/equipment or agronomy careers.

The two-year program includes courses in computers, GPS (Global Positioning Systems), ArcView and data collection, in addition to agronomy and agriculture economics. Students also complete an internship during the summer. This degree can apply to many career areas and can be customized for this program. A strong background in math and science is recommended for this program.

Career opportunities: precision farming specialists, custom applicators, mapping technicians, GIS coordinators in agriculture, natural resources and other industries that apply geospatial technologies.

Degree Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGA-154	Fundamentals of Soil Science	3
AGC-103	Ag Computer	3
AGC-313	Leadership in Agriculture	1
AGP-333	Precision Farming Systems	3
ENG-105	Composition I	3
OR		
ENG-101	Elements of Writing	
MGT-145	Human Relations in Management	3
OR		
SOC-110	Introduction to Sociology	
		16
Spring Term I		
AGA-114	Principles of Agronomy	3
AGC-160	Introduction to Technical Chemistry	4
AGP-405	Introduction to ArcView	3
MAT-107	Survey of Mathematics	4
-------	Career specialty requirement	3
		17
Summer Term		
PHI-105	Introduction to Ethics (Humanities)	3
-------	Career specialty requirement	3
		6
Fall Term II		
AGP-420	Geospatial Data Collection	3
BIO-104	Introductory Biology with Lab	3
MAT-115	Mathematics and Society	3
SPC-101	Fundamentals of Oral Communication	3
-------	Career specialty requirement	3
		15
Spring Term II		
AGB-101	Agricultural Economics	3
AGC-313	Leadership in Agriculture	1
AGC-932	Internship	4
AGP-425	Agricultural Spatial Analysis	3
-------	Career specialty requirement	3
		14

Total program credit hours **68**

Certificate Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGA-114	Principles of Agronomy	3
AGA-154	Fundamentals of Soil Science	3
AGA-165	Agricultural Fertilizer & Chemistry	3
AGA-209	Row Crop Production	3

AGP-329	Introduction to GPS	3
OR		
AGP-333	Precision Farming Systems	3
AGP-405	Introduction to ArcView	3
		18
Total program credit hours		**18**

Agriculture Business

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

Agriculture Business students prepare for careers in the agricultural sales and service industry. Students study sales, economics, farm management, marketing, agronomy and animal science, and are required to complete an internship.

Career opportunities: territory salespeople, counter sales, production assistants, department managers, advertising communication assistants or managers.

Degree Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGA-154	Fundamentals of Soil Science	3
AGB-133	Introduction to Ag Business	3
AGC-103	Ag Computer	3
AGC-313	Leadership in Agriculture	1
AGS-113	Survey of the Animal Industry	3
COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	
COM-744	Oral Communications in the Workplace	3
OR		
ENG-106	Composition II	
OR		
SPC-101	Fundamentals of Oral Communication	
		19
Spring Term I		
AGA-114	Principles of Agronomy	3
AGA-165	Agricultural Fertilizers and Chemicals	3
AGB-321	Buildings and Equipment	2
AGB-470	Farm Records, Accounts, Analysis	3
OR		
ACC-152	Financial Accounting	3
AGC-130	Mathematics I - Agriculture	3
AGC-932	Internship	3
		17
Summer Term		
AGA-381	Crop Scouting	3
AGB-336	Agricultural Selling	3
AGC-932	Internship	2
MGT-145	Human Relations in Management	3
		11
Fall Term II		
AGB-330	Farm Business Management	3
AGB-466	Agricultural Finance	3
AGC-160	Introduction to Technical Chemistry	4
AGS-319	Animal Nutrition	3
-------	Humanities Elective	3
		16
Spring Term II		
AGB-101	Agricultural Economics	3
AGB-235	Introduction to Agriculture Markets	3
AGB-331	Entrepreneurship in Agriculture	3
AGP-333	Precision Farming Systems	3
		12
Total program credit hours		**75**

Agriculture Production Management

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

Agriculture Production Management students prepare for employment in the food production chain. Students can pursue specialized studies (options) in general ag production, or beef, swine or crop production. Students who want to take courses from more than one of these areas can customize their studies with the assistance of a faculty member. This program includes an internship.

Career opportunities: farm management, swine production facilities, feedlots, cattle ranches, herdsman positions, crop production and agronomy positions.

Degree Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGC-103	Ag Computer	3
AGC-313	Leadership in Agriculture	1
AGS-319	Animal Nutrition	3
OR		
AGA-154	Fundamentals of Soil Science	

COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	
-------	Agricultural Technical Courses	5
		15

Spring Term II

AGC-130	Mathematics I - Agriculture	3
AGC-160	Introduction to Technical Chemistry	4
AGP-333	Precision Farming Systems	3
OR		
AGC-420	Issues in Agriculture	3
AGS-214	Domestic Animal Physiology	3
OR		
AGA-114	Principles of Agronomy	3
COM-744	Oral Communication in the Workplace	3
OR		
ENG-106	Composition II	3
OR		
SPS-101	Fundamentals of Oral Communication	3
-------	Agricultural Technical Courses	3
		19

Summer Term

AGC-932	Internship	5
		5

Fall Term II

AGB-330	Farm Business Management	3
AGB-470	Farm Records, Accounts, Analysis	3
OR		
ACC-152	Financial Accounting	
MGT-145	Human Relations in Management	3
-------	Agricultural Technical Courses	5
-------	Humanities Requirement	3
		17

Spring Term II

AGB-235	Introduction to Agriculture Markets	3
AGB-466	Agriculture Finance	3
-------	Agricultural Technical Courses	3
-------	Agriculture Electives	3
		12

Total program credit hours **68**

Agricultural Production Diploma Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGC-313	Leadership in Agriculture	1
-------	Agricultural Technical Courses	12
		13
Spring Term II		
-------	Agricultural Technical Courses	12
-------	General Education Courses	3
		15
Summer Term		
AGC-932	Internship	2
-------	Agricultural Technical Courses	3
		5
Total program credit hours		**33**

Apparel Merchandising

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)
Diploma
1 year (2 semesters)

The Apparel Merchandising diploma program is designed to provide the fashion knowledge, sales and human relations skills necessary for immediate involvement in this area of retailing. The program incorporates a supervised business internship where students work with other employees in a retail establishment. An annual fashion show, field trips and other special experiences provide opportunities to learn outside the classroom.

The diploma program can be combined with additional course work in general education, marketing and management to earn an Associate of Applied Science degree in Marketing Management.

Credits earned in the Apparel Merchandising Associate of Applied Science degree program are fully transferable to Iowa State University. Two additional years of study at ISU will earn a Bachelor of Science degree, and students will be prepared for mid- and top-level management or merchandising positions.

Career opportunities: fashion sales/buyer, accessory coordinator, specialty and department store management, visual merchandiser, area supervisor.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
APP-120	Apparel Visual Merchandising	3
APP-130	Principles of Fashion Merchandising	3
APP-140	Fashion History	3
ENG-105	Composition I	3
MKT-140	Principles of Selling	3
		15
Second Semester		
APP-170	Fashion Trends and Consumer	3

	Analysis	
APP-220	Fashion Show Procedures	3
ENG-106	Composition II	3
MAT-140	Finite Math	3
OR		
ADM-133	Business Math & Calculators	3
OR		
MAT-102	Intermediate Algebra	4
SPC-101	Fundamentals of Oral Communication	3
		15

Third Semester

ACC-152	Financial Accounting	4
APP-210	Apparel Textiles	3
MKT-160	Principles of Retailing	3
PSY-111	Introduction to Psychology	3
-------	Humanities or History/Cultures core	3
		16

Fourth Semester

ECN-130	Principles of Microeconomics	3
MAT-157	Statistics	4
MKT-110	Principles of Marketing	3
OR		
APP-240	Fashion Design	
-------	Humanities or History/Cultures core	3
-------	Science core	3
		16

Total program credit hours **62**

Apparel Merchandising Diploma Option

First Semester

APP-120	Apparel Visual Merchandising	3
APP-130	Principles of Fashion Merchandising	3
APP-140	Fashion History	3
APP-210	Apparel Textiles	3
CSC-110	Introduction to Computers	3
MGT-145	Human Relations in Management	3
		18

Second Semester

APP-170	Fashion Trends and Consumer Analysis	3
APP-220	Fashion Show Procedures	3
BUS-290	Employment Search and Workplace Success	1
BUS-932	Internship	3
-------	Communication arts requirement	3
-------	Math requirement	3
		16

Total diploma program credit hours **34**

Architectural Technology

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall

Award
Associate of Applied Science degree
2 years (4 semesters), 12-week summer session (first year only), some required evening classes

Architectural Technology prepares graduates to become architectural CAD technicians. The program includes manual drafting as well as in-depth instruction in CAD, computer applications (word processing, desktop publishing, multimedia), essential group skills (teamwork, project development and problem-solving) and liberal arts studies. Practical experience is enhanced through a paid architectural/construction-related internship or an unpaid architectural mentoring program.

Career opportunities: CAD technicians for architectural, civil, mechanical, electrical and/or structural services; estimators; designers; drafters for building material suppliers; remodelers; kitchen designers; residential designers.

Degree Requirements

Course Number	Course Title	Credit Hours
First Year - First Semester (Fall)		
ARC-300	Architectural Sketching	3
CON-116	Architectural Plans and Specs	2
OR		
EGT-460	PLTW - Civil Engineering and Architecture	3
CON-190	Residential Construction	3
CON-311	Building Construction Systems I	3
IND-155	Microcomputer Applications	2
MAT-716	Industrial Math II	3
		16
First Year - Second Semester (Spring)		
ARC-195	CAD Sketchup	3
ART-133	Drawing (Humanities)	3
CAD-200	CAD SoftPlan and Chief Architect	3
CAD-400	AutoCAD for Architecture	3
CON-313	Building Construction Systems II	3
CON-321	Residential Estimating	2
		17
Summer Term		
ARC-100	Architectural Profession	1
ARC-135	American Architecture	1
CAD-202	Architectural CAD Residential	3
CON-134	Surveying and Site Layout	2
		7

Second Year - First Semester (Fall)		
CAD-201	CAD REVIT	3
CAD-204	Architectural CAD Commercial	6
CON-316	Sustainable Construction Science	3
-------	Communications Elective	3
		15
Second Year - Second Semester (Spring)		
ARC-932	Internship	2
OR		
MGT-300	Introduction to Entrepreneurship	3
CAD-206	Architectural CAD Projects	6
CAD-207	CAD REVIT Projects	3
http://www.		
-------	Communications Elective	3
-------	Social Science Elective	3
		17
Total program credit hours		**72**

Automotive Collision Repair

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall

Award
Diploma
1 year (2 semesters, 1 summer)

Certification
I-CAR Welding certification

Automotive Collision Repair teaches students the theory and practices of metal forming and shaping; body fillers, frame straightening and repair, uni-body straightening and repairs; refinishing procedures; paints and paint chemistry; glass installation; upholstery removal and replacement; and equipment use and care. Cost estimating and customer relations skills are also emphasized. A majority of class time is devoted to practical laboratory experience in the college's Auto Collision Repair Center. A tool set is required for this program.

Career opportunities: body/fender shop, auto/truck dealership, auto garage or repair service, auto or parts manufacturer, tool sales company, equipment/materials sales, insurance claims adjuster.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CRR-338	Introduction to Metalworking	3
CRR-803	Introduction to Refinishing	3
CRR-820	Metalworking and Refinishing Practices	3
CRR-830	Metalworking and Refinishing I	3
MAT-715	Industrial Math I	3
WEL-333	Auto Collision Welding	2
		17
Second Semester (Spring)		
AUT-603	Basic Automotive Electricity	3
CRR-342	Metalworking II	4
CRR-344	Metalworking III	4
CRR-833	Refinishing II	3
CRR-837	Refinishing III	3
		17
Summer Term		
CRR-545	Body Straightening and Painting	7
MGT-145	Human Relations in Management	3
		10
Total program credit hours		**44**

Automotive Technology

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Diploma option available. See advisor for more information.

Certifications
A1-A8, L1, ASE certifications

The Automotive Technology program provides entry-level skills and knowledge for students who want to work in the automotive technology field. The curriculum emphasizes automotive electronics and features courses in body electrical, engine electrical and computerized fuel delivery systems. Kirkwood is designated as one of only 45 Toyota T-TEN (Technical Training and Education Network) schools in the nation and the only such school in Iowa. This program is MasterTM-certified by the National Automotive Technicians Education Foundation (NATEF), and the National Institute of Automotive Services Excellence certifies our instructors Master Technicians. Kirkwood is an authorized Snap-On Certified Training Center. After you complete the Snap-On Diagnostic products training and pass the rigorous test, you are considered a power user of Snap-On diagnostic tools, with an efficiency of 90-100 percent. Achieve master status (top 10 percent nationwide) and be one of the most sought after technicians in the field.

Career opportunities: auto dealerships, franchised auto centers, independent repair facilities, specialty service shops, auto sales and support, fleet maintenance.

Degree Requirements

Course Number	Course Title	Credit Hours

First Semester (Fall)		
AUT-104	Introduction to Automotive Technology	3
AUT-611	Automotive Electricity	5
AUT-655	Automotive Advanced Electricity	5
AUT-888	Technical Lab I	4
MAT-715	Industrial Math I	3
		20
Second Semester (Spring)		
AUT-821	Computerized Engine Controls I	5
AUT-822	Computerized Engine Controls II	5
AUT-889	Technical Lab II	4
CSC-110	Introduction to Computers	3
OR		
IND-155	Microcomputer Applications	2
		17
Summer Term		
AUT-704	Automotive Heating & Air Conditioning	4
AUT-932	Internship	2
WEL-270	Automotive Welding Principles	1
-------	Communications Elective	3
		10
Third Semester (Fall)		
AUT-205	Automotive Automatic Transmissions & Transaxles	5
AUT-305	Automotive Manual Drive Train & Axles	5
AUT-505	Automotive Brake Systems	5
-------	Communications Elective	3
		18
Fourth Semester (Spring)		
AUT-165	Automotive Engine Repair	5
AUT-404	Automotive Suspension & Steering	4
AUT-620	Hybrid Electric Vehicle Fundamentals	2
-------	Social Science Elective	3
-------	Humanities	3
		17
Total program credit hours		**82**

Bakery and Pastry Arts

Hospitality Arts
The Hotel at Kirkwood Center
319-848-8770
www.kirkwood.edu/hospitality

Entry time
Fall or Spring

Award
Diploma
1 year (2 semesters)

The Bakery and Pastry Arts diploma is designed to prepare students for entry-level bakery employment. Students prepare for their careers through practical experience in preparation of baked goods for The Class Act restaurant and conference center at The Hotel at Kirkwood Center. Students are required to purchase uniforms and tools, to use when in labs.

Career opportunities: bakery worker, baker, cake decorator, pastry chef.

Required Courses

Course Number	Course Title	Credit Hours
First Semester		
HCM-100	Sanitation and Safety	2
HCM-117	Bakery Basics	3
HCM-122	International Breads	3
HCM-123	International Pastries	3
HCM-125	Basic Cake Decorating	1
HCM-126	Science of Baking	2
HCM-190	Bakery Essentials	1
HCM-260	Hospitality Math	3
		18
Second Semester		
COM-723	Workplace Communication	3
OR		
ENG-105	Composition I	3
HCM-127	Advanced Cake Decorating	1
HCM-256	Cost Control and Merchandising	3
HCM-295	Professional Production	4
MGT-145	Human Relations in Management	3
OR		
PSY-111	Introduction to Psychology	3
-------	Bakery electives	4
		18
Total program credit hours		**36**

Biotechnology

Math/Science
240 Linn Hall
319-398-5516
www.kirkwood.edu/mathscience

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters)

Liberal Arts transfer, diploma and certificate options are available. See advisor for information.

From designing plants that produce better crops to finding cures to disease, biotechnology has made a mark on modern life. Most seldom realize nearly everything in our lives, including the food we eat, the clothes we wear and the various products we use every day, is touched in some way by biotechnology.

Students in Kirkwood's Biotechnology program first learn to operate and maintain lab equipment and adhere to federal guidelines. Later in the program, students prepare solutions and reagents; explore microbiology, cell biology, immunology, and genetic engineering and molecule biology; isolate and characterize proteins; and perform chemical assays.

Career opportunities: animal technician, lab assistant, lab-based manufacturing/production technician, lab technician, manufacturing technician, quality control operator, research assistant, research technician, science technician.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
BIO-190	Introductory Biotechnology *or*	3
EGT-440	PLTW - Biotechnical Engineering *or*	
EGR-440	PLTW - Biotechnical Engineering	
BIO-400	Lab Methodology	3
CHM-110	Introduction to Chemistry	3
CHM-111	Introduction to Chemistry Lab	1
ENG-105	Composition I	3
MAT-120	College Algebra *or*	3
MAT-138	College Algebra with Limits	
		16
Second Semester (Spring)		
BIO-112	General Biology I	4
CHM-132	Introduction to Organic and Biochemistry	4
CSC-110	Introduction to Computers	3
ENG-108	Composition II: Technical Writing	3
		14
Third Semester (Fall)		
BIO-186	Microbiology	4
BIO-410	Molecular Biology Techniques I	4
BIO-430	Molecular Genetics	3
MAT-157	Statistics	4
		15
Fourth Semester (Spring)		
BIO-420	Molecular Biology Techniques II	4
BIO-450	Basic Bioinformatics	3
MGT-145	Human Relations in Management	3
PHI-105	Introduction to Ethics	3
SPC-101	Fundamentals of Oral Communication	3
		16
Fifth Semester (Summer)		
BIO-249	Biotechnology Internship	3
		3
Total program credit hours		**64**

CAD/Mechanical Engineering Technology

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The CAD/Mechanical Engineering Technology curriculum prepares students for entry-level positions as mechanical engineering technicians and provides skills for those already in the field to gain advancement to designer status. Students focus on engineering fundamentals and the means of conveying design intent from drawing layouts and symbols through geometric dimensioning and tolerancing. Industry-standard CAD software is taught during all four semesters of the program to enhance employment opportunities. Competency in engineering fundamentals is built through courses in statics, strength of materials, kinematics, hydraulics, dynamics and machine design. A student can transfer credits from this program to UNI or William Penn University and work toward a B.S. in manufacturing or industrial technology.

Career opportunities: engineering technician, test lab technician, CAD operator/designer, technical writer, mechanical engineering assistant.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CAD-300	AutoCAD for Applied Engineering	2
DRF-141	Engineering Drawings	2
DRF-142	Engineering Design I	3
OR		
EGT-400	PLTW - Introduction to Engineering Design	3
IND-155	Microcomputer Applications	2
MAT-745	Technical Mathematics I	4
PHY-190	Physics I	3
		16
Second Semester (Spring)		
CAD-140	Parametric Solid Modeling I	3
DRF-143	Engineering Design II	3
EGT-125	Applied Statics	4
MAT-746	Technical Mathematics II	4
PHY-192	Physics II	3
		17
Summer Term		
-------	Communication Elective	3
-------	Humanities Elective	3
-------	Social Science Elective	3
		9
Third Semester (Fall)		
CAD-141	Parametric Solid Modeling II	3
CAD-230	Geometric Dimensioning and	2

	Tolerancing	
EGT-124	Strength of Materials	4
EGT-132	Kinematics	4
EGT-146	Hydraulics	3
MFG-202	Manufacturing Processes	2
		18

Fourth Semester (Spring)

CAD-320	Paramedic Solid Modeling III	2
EGT-136	Dynamics	4
EGT-188	Design Problems	4
EGT-194	Machine Design	5
-------	Communications Elective	3
		18

Total program credit hours **78**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CAD-300	AutoCAD for Applied Engineering	2
DRF-141	Engineering Drawings	2
DRF-142	Engineering Design I	3
IND-155	Microcomputer Applications	2
MAT-745	Technical Mathematics I	4
PHY-190	Physics I	3
		16
Second Semester (Spring)		
CAD-140	Parametric Solid Modeling I	3
DRF-143	Engineering Design II	3
EGT-125	Applied Statics	4
MAT-746	Technical Mathematics II	4
PHY-192	Physics II	3
		17
Summer Term		
-------	Communication elective	3
-------	Humanities or History/Cultures elective	3
-------	Social Science Elective	3
		9
Total program credit hours		**42**

Carpentry

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall

Award
Diploma
1 year (2 semesters)

The Carpentry program prepares students to enter the skilled building trades. Students are given a hands-on intensive introduction to the skills used by carpenters. The classroom experience combines lecture and lab activities that cover all aspects of a carpenter's job. Students may choose to pursue an A.A.S. degree in the Construction Management program upon completion of the Carpentry program.

Career opportunities: residential construction carpenter, commercial construction carpenter, gateway to apprenticeship program.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CON-116	Architectural Plans and Specs	2
CON-273	Carpentry Lab I	6
CON-311	Building Construction Systems I	3
CON-932	Internship	1
MAT-716	Industrial Math II	3
-------	Social Science Elective	3
		18
Second Semester (Spring)		
CON-134	Surveying and Site Layout	2
CON-274	Carpentry Lab II	8
CON-312	Building Construction Systems II - Carpentry	2
CON-321	Residential Estimating	2
CON-932	Internship	2
		16
Total program credit hours		**34**

CNC Machining Technology

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Diploma option available. See advisor for information.

Computer Numerical Control (CNC) machinists manufacture precision parts and products. They often complete many set-ups for short runs to meet just-in-time delivery demands. People who enter this field must be flexible and have basic knowledge of machine tool CNC.

Students program, edit, set up and operate CNC lathes and mills, as well as study quality control methods known as statistical process control. They also learn special quality control equipment, such as coordinate measuring machines, and advanced automated production methods.

Students can transfer credits from this program to UNI and work toward a B.A. in Technology Management.

Career opportunities: machinist, mold builder, salesperson, job shop technician, CNC programmer/operator, quality control technician, tool and die maker.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
MAT-735	Machinist Mathematics I	2
MFG-120	Machinist Trade Printreading I	1
MFG-213	Basic Machine Theory	5
MFG-222	Machine Operations I	4
MFG-227	Advanced Machine Operations I	4
		16
Second Semester (Spring)		
IND-155	Microcomputer Applications	2
OR		
CSC-110	Introduction to Computers	3
MAT-736	Machinist Mathematics II	1
MFG-130	Machine Trade Printreading II	1
MFG-215	Advanced Machine Theory	3
MFG-228	Machine Operations II	4
MFG-230	Advanced Machine Operations II	4
		15
Summer Term		
MFG-302	CNC Fundamentals *or*	3
EGT-450	PLTW - Computer Integrated Manufacturing	
MFG-420	Jig and Fixture Design	4
-------	Communications Elective	3
		10
Third Semester (Fall)		
CAD-230	Geometric Dimensioning & Tolerancing	2
CAD-300	AutoCAD for Applied Engineering	2
CAD-310	Inventor for Applied Engineering	1
MAT-137	Applications of Geometry	1
MFG-311	Intermediate CNC	6
-------	Humanities Elective	3
		15
Fourth Semester (Spring)		
MFG-313	Advanced CNC	6
MFG-317	Automated Production Methods	5
-------	Social Science Elective	3
-------	Communications Elective	3
		17
Total program credit hours		**73**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
MAT-735	Machinist Mathematics I	2
MFG-120	Machinist Trade Printreading I	1
MFG-213	Basic Machine Theory	5
MFG-222	Machine Operations I	4
MFG-227	Advanced Machine Operations I	4
		16
Second Semester (Spring)		
IND-155	Microcomputer Applications	2
MAT-736	Machinist Mathematics II	1
MFG-130	Machine Trade Printreading II	1
MFG-215	Advanced Machine Theory	3
MFG-228	Machine Operations II	4
MFG-230	Advanced Machine Operations II	4
		15
Summer Term		
MFG-302	CNC Fundamentals	3
OR		
EGT-450	PLTW - Computer Integrated Manufacturing	
MFG-420	Jig and Fixture Design	4
-------	Communications Elective	3
		10
Total program credit hours		**41**

Computer Information Systems

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

Certificates in Java and .NET programming are available. See advisor for information.

Students who are creative with computer technology and want to work in the business world should consider a career in Computer Information Systems. Computers and other information technologies are the technical foundations, or tools, of information systems.

The Associate of Applied Science degree puts graduates to work in the computer programming field. Students learn to design, write, test and document computer programs in languages such as Java and Visual Basic.NET.

Career opportunities: computer programmer, business systems analyst, web designer, operations systems analyst, client/server application developer, internet programmer.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
CIS-121	Introduction to Programming Logic	3
CIS-207	Fundamentals of Web Programming	3

CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
MAT-102	Intermediate Algebra	4
		16

Second Semester

CIS-172	Java	4
CIS-332	Database & SQL	3
CIS-622	.NET Programming I	3
COM-744	Oral Communication in the Workplace	3
OR		
SPC-101	Fundamentals of Oral Communication	3
MGT-145	Human Relations in Management	3
		16

Summer

BUS-932	Internship	3
OR		
-------	Business/Accounting Elective	3
		3

Third Semester

CIS-176	Java II	4
CIS-504	Structured Systems Analysis	3
CIS-624	.NET Programming II	3
CIS-802	PC Programming Projects	4
-------	Humanities or History/Cultures	3
		17

Fourth Semester

BUS-290	Employment Search and Workplace Success	1
CIS-153	Data Structures	4
CIS-181	Java III	3
CIS-280	Client Side Scripting	3
CIS-626	.NET Programming III	3
		14

Total program credit hours **66**

Java Programming Certificate Requirements

Course Number	Course Title	Credit Hours
CIS-121	Introduction to Programming Logic	3
CIS-172	Java	4
CIS-176	Java II	4
CIS-181	Java III	3
CIS-332	Database & SQL	3
		17

Total program credit hours **17**

.NET Programming Certificate Requirements

Course Number	Course Title	Credit Hours
CIS-121	Introduction to Programming Logic	3
CIS-332	Database & SQL	3
CIS-622	.NET Programming I	3
CIS-624	.NET Programming II	3
CIS-626	.NET Programming III	3
		15

Total program credit hours **15**

Computer Support Specialist

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)
PC Tech diploma option
1 year (2 semesters)

Computer support specialists provide technical assistance to users as well as maintain, upgrade, and repair computer systems and networks. Students interested in this field should have an interest in working with people. Specialists constantly interact with customers and fellow employees as they answer questions and give valuable advice. They should also enjoy learning about new technology and be willing to work on both hardware and software systems. Good writing and communications skills are also required.

This degree focuses on a variety of IT skills that include hardware, software, networking and programming, as well as problem-solving and analytical skills. Some specialists may be involved with planning, coordinating and implementing an organization's information security. These workers may be called upon to educate users on computer security, install security software, monitor the network for security breaches, respond to cyber attacks, and in some cases, gather data and evidence to be used in prosecuting cyber crime.

Career opportunities: computer support specialists, technical support specialists, help desk technicians.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
CIS-135	Microcomputer Operating Systems	3
CSC-110	Introduction to Computers	3

COM-723	Workplace Communications	3
OR		
ENG-101	Elements of Writing	3
OR		
ENG-105	Composition I	3
MKT-180	Customer Service Strategies	1
NET-122	Computer Hardware Basics	3
NET-154	Networking Basics	3
		16

Second Semester

COM-744	Oral Communication in the Workplace	3
OR		
SPC-101	Fundamentals of Oral Communication	3
OR		
SPC-112	Public Speaking	3
MGT-145	Human Relations in Management	3
NET-137	Advanced PC Concepts	3
NET-212	Cisco Networking	3
NET-785	Fundamentals of Desktop Support	3
NET-850	Special Topics for PC Technicians	3
		18

Third Semester

BCA-213	Intermediate Computer Business Applications	3
CIS-121	Introduction to Programming Logic	3
OR		
CIS-128	Programming Concepts	3
CIS-207	Fundamentals of Web Programming	3
NET-174	LAN Administration	3
-------	Humanities	3
		15

Fourth Semester

ACC-111	Introduction to Accounting	3
OR		
ACC-152	Financial Accounting	4
BUS-290	Employment Search and Workplace Success	1
CIS-307	Introduction to Databases	3
OR		
CIS-332	Database & SQL	3
MAT-102	Intermediate Algebra	4
MGT-121	Project Management Basics	3
NET-600	Network Security Basics	3
		17

Total program credit hours **66**

Networking & Computer Support Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
ADM-928	Independent Study (E-Portfolio)	1
BUS-191	Professionalism: SIFE	1
CIS-128	Programming Concepts	3
OR		
CIS-207	Fundamentals of Web Programming	3
CSC-110	Introduction to Computers	3
NET-122	Computer Hardware Basics	3
NET-154	Networking Basics	3
SPC-112	Public Speaking	3
		17
Second Semester		
ADM-928	Independent Study (E-Portfolio)	1
BCA-213	Intermediate Computer Business Apps	3
OR		
CIS-307	Introduction to Databases	3
BUS-191	Professionalism: SIFE	1
BUS-928	Independent Study (American Government)	3
NET-137	Advanced PC Concepts	3
NET-212	Cisco Networking	3
NET-321	Windows Networking	3
		17
Third Semester		
BUS-932	Internship	1
NET-174	LAN Administration	3
OR		
NET-222	Cisco Routers	3
OR		
NET-338	Directory Concepts	3
		4
Total diploma program credit hours		**38**

PC Tech. Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
CIS-135	Microcomputer Operating Systems	3
CSC-110	Introduction to Computers	3
COM-723	Workplace Communications	3
OR		
ENG-101	Elements of Writing	3
OR		
ENG-105	Composition I	3
MKT-180	Customer Service Strategies	1
NET-122	Computer Hardware Basics	3
NET-154	Networking Basics	3
		16
Second Semester		
MGT-145	Human Relations in Management	3
NET-137	Advanced PC Concepts	3
NET-212	Cisco Networking	3
NET-785	Fundamentals of Desktop Support	3
NET-850	Special Topics for PC Technicians	3
SPC-101	Fundamentals of Oral	3

	Communication	
OR		
SPC-112	Public Speaking	3
OR		
COM-744	Oral Communication in the Workplace	3
		18

Total diploma program credit hours **34**

Construction Management

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Certificate options available. See advisor for information.

The Construction Management program provides entry-level skills and knowledge for students who want to pursue one of the many careers available in the construction industry. Classes during the first year emphasize hands-on laboratory experiences in construction practices, architectural drafting and CAD, estimating, and microcomputer applications. The summer session allows students to gain practical experience during a full-time, paid internship in the construction field. Second-year classes emphasize skills and knowledge development in management, scheduling, estimating and legal issues.

Career opportunities: residential, commercial or highway construction; material suppliers; building inspection; component manufacturing.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ARC-300	Architectural Sketching	3
CON-116	Architectural Plans and Specs	2
CON-190	Residential Construction	3
CON-311	Building Construction Systems I	3
IND-155	Microcomputer Applications	2
MAT-716	Industrial Math II	3
		16
Second Semester (Spring)		
CON-272	Commercial Construction	3
CON-313	Building Construction Systems II	3
CON-321	Residential Estimating	2
CON-331	Construction Material Science	3
-------	Communications Elective	3
-------	Humanities Elective	3
		17
Summer Term		
CON-932	Internship	3
-------	Social Science Elective	3
		6
Third Semester (Fall)		
CON-134	Surveying and Site Layout	2
CON-316	Sustainable Construction Science	3
CON-323	Light Commercial Estimating	3
CON-335	Construction Planning & Scheduling	2
MGT-101	Principles of Management	3
OR		
MGT-130	Principles of Supervision	3
-------	Communications Elective	3
		16
Fourth Semester (Spring)		
CAD-201	CAD REVIT	3
CON-324	Commercial Estimating	3
CON-328	Construction Law and Ethics	3
CON-330	Construction Management Applications	3
CON-390	Construction Capstone	3
		15

Total program credit hours **70**

Construction Estimator Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CON-116	Architectural Plans and Specs	2
CSC-110	Introduction to Computers	3
OR		
IND-155	Microcomputer Applications	2
		4
Second Semester (Spring)		
CON-321	Residential Estimating	2
		2
Summer Term		
CON-323	Light Commercial Estimating	3
		3
Third Semester (Fall)		
CON-324	Commercial Estimating	3
		3
Total program credit hours		**12**

Construction Supervision Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CSC-110	Introduction to Computers	3
OR		
IND-155	Microcomputer Applications	2
MGT-130	Principles of Supervision	3
		5

Second Semester (Spring)		
CON-390	Construction Project Management	3
		3
Summer Term		
CON-335	Construction Planning & Scheduling	2
		2
Third Semester (Fall)		
CON-134	Surveying and Site Layout	2
CON-328	Construction Law	3
		5
Total program credit hours		**15**

Culinary Arts

Hospitality Arts
The Hotel at Kirkwood Center
319-848-8770
www.kirkwood.edu/hospitality

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters)

Students in Kirkwood's food service programs prepare for their careers through practical experience in management, food preparation and service.

Students assist in the daily operation of The Class Act, a full-service restaurant at The Hotel at Kirkwood Center. The restaurant features fine dining for hotel and conference center guests, Kirkwood staff and the public. Students take a leadership role in planning, preparing and servicing catered events on campus during their last semester. Students are required to purchase professional uniforms and tools to use when in labs and kitchens.

Field trips to various types of food-related establishments and an optional trip to the industry's national convention are also included in the course of study. International travel and education opportunities are available for culinary students.

Career opportunities: chefs, cooks, catering managers, kitchen managers, other food service professionals.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	3
CSC-110	Introduction to Computers	3
HCM-100	Sanitation and Safety	2
HCM-109	Kitchen Essentials	1.5
HCM-138	Food Fundamentals	3
HCM-147	Culinary Techniques	1.5
HCM-260	Hospitality Math	3
OR		
MAT-140	Finite Math	
HCM-324	College Orientation	1
		18
Second Semester		
HCM-117	Bakery Basics	3
HCM-133	Fabrication I	1.5
HCM-134	Fabrication II	1.5
HCM-161	Stocks and Sauces	1.5
HCM-181	International Cuisine	4
HCM-269	Garde Manger	1.5
HCM-315	Wine, Beer and Spirits Basics	3.5
HCM-321	Introduction to Hospitality Industry	1
		17.5
Third Semester		
HCM-166	Culinary Arts	4
HCM-204	Service Techniques	3
HCM-227	Menu Planning	1
HCM-231	Nutrition	2
HCM-273	Advanced Garde Manger	3
HCM-279	Hospitality Accounting	3
OR		
ACC-152	Financial Accounting	4
		16
Fourth Semester		
COM-744	Oral Communication/Workplace	3
OR		
ENG-106	Composition II	3
FLS-118	Spanish for Professionals: Hospitality	3
HCM-251	Purchasing, Receiving and Inventory	2
HCM-330	Hospitality Personnel Management	3
HCM-342	Hospitality Events and Catering (BOH)	3
MGT-145	Human Relations in Management	3
OR		
PSY-111	Introduction to Psychology	3
		17
Total program credit hours		**68.5**

Dental Assisting

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall or Spring

Award

Diploma
1 year (3 semesters, including summer)
Associate of Applied Science degree after completion of additional required courses.

Dental assistants help dentists chair side and also perform functions such as polishing teeth, taking X-rays, mixing materials and sterilizing instruments. Some assistants also manage the office and patient accounts, schedule appointments and purchase supplies.

Career opportunities: private dental office, clinics, research/teaching, consulting, hospitals, sales and insurance claims, specialty practices such as orthodontics or children's dentistry.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
DEA-403	Dental Materials for the DA	3
DEA-517	Dental Assisting I	3.5
DEN-100	Fundamentals of Dentistry	3.5
DEN-110	Dental Terminology	2.0
DEN-120	Dental Anatomy	3
HSC-107	Professionals in Health	2
HSC-210	Health Skills I	1
		18
Second Semester		
DEA-285	Oral Pathology for Dental Assisting	1
DEA-518	Dental Assisting II	1.5
DEA-580	Dental Assisting Clinic I	4
DEA-610	Specialty Dentistry	4.5
DEN-130	Head and Neck Anatomy	1.5
DEN-200	Preventive Dentistry	2
DEN-300	Dental Radiography	3
		17.5
Third Semester		
COM-744	Oral Communication in the Workplace	3
OR		
COM-222	Communication for Health Care Professionals	3
DEA-519	Dental Assisting III	1.5
DEA-581	Dental Assisting Clinic II	4.5
DEA-702	Dental Office Procedures	2
DEN-220	Dental Nutrition	1
		12
Total diploma program hours		**47.5**
Associate of Applied Science Degree Courses		
ENG-105	Composition I	3
PSY-111	Introduction to Psychology	3
MAT-731	Introduction to Math	2
-------	Humanities Elective	3
-------	Electives	6
		17
Total Associate of Applied Science degree program credit hours		**64.5**

Dental Hygiene

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall

Award
Associate of Applied Science degree
2 years (5 semesters)

Dental hygienists help prevent, detect and treat diseases of the mouth, playing a key role in the pursuit of optimal patient health via education and treatment planning. Hygienists work independently with patients.

Dental hygienists remove calculus deposits and stains from teeth, polish teeth, apply sealants and fluoride, take X-rays, record medical and dental histories, and educate patients on how proper brushing, flossing and eating habits can help maintain a healthy mouth.

Career opportunities: dental offices/clinics/hospitals, government agencies, insurance claims processing, specialty dental practices, sales, teaching.

Degree Requirements

Course Number	Course Title	Credit Hours
Prerequisite courses		
*All prerequisites must have been completed in the last five years to be considered for admission.		
BCA-189	Microcomputer Literacy	1
BIO-168	Human Anatomy and Physiology I with Lab	4
CHM-110	Introduction to Chemistry	3
CHM-111	Introduction to Chemistry Lab	1
MAT-731	Introduction to Math	2
		11
First Semester		
DEN-100	Fundamentals of Dentistry	3.5
DEN-120	Dental Anatomy	3
DEN-130	Head and Neck Anatomy	1.5
DEN-200	Preventive Dentistry	2
DHY-173	Dental Hygiene I	4
HSC-107	Professionals in Health	2
HSC-210	Health Skills I	1
		17
Second Semester		
BIO-173	Human Anatomy and Physiology II with Lab	4
CHM-132	Introduction to Organic and Biochemistry	4
DEN-300	Dental Radiography	3

DHY-186	Dental Hygiene II	4
DHY-140	General and Oral Pathology	2
		17

Third Semester

BIO-186	Microbiology	4
DEN-220	Dental Nutrition	1
DHY-220	Dental Materials	1.5
DHY-270	Local Anesthesia for the Dental Hygienist	1
DHY-285	Dental Hygiene III	3
		10.5

Fourth Semester

DHY-134	Therapeutics and Pain Control	2
DHY-211	Periodontology	2
DHY-250	Community Dental Health	1.5
DHY-296	Dental Hygiene IV	5
SPC-101	Fundamentals of Oral Communication *or*	3
COM-222	Communication for Health Care Professionals	3
		13.5

Fifth Semester

DHY-306	Dental Hygiene V	5
ENG-105	Composition I	3
PSY-111	Introduction to Psychology	3
SOC-110	Introduction to Sociology	3
-------	Humanities Elective	3
		17

Total program credit hours **86**

Dental Technology

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall

Award
Associate of Applied Science degree
2 years (5 semesters)

The goal and challenge for a dental technician is to create a restoration that is a perfect match to a patient's natural tooth. Artistic and creative abilities are valuable assets for a dental technician. By using several technologies, a dental technician improves patients' quality of life, appearance and health, not to mention creates beautiful teeth and fabulous smiles. Although a majority of the work provided by dental technicians is done independently, they are valued members of the dental team.

Career opportunities: large production laboratory, small multi-task laboratory, technical representative, research.

Degree Requirements

Course Number	Course Title	Credit Hours

First Semester

DEN-120	Dental Anatomy	3
DLT-152	DLT Oral Anatomy	1
DLT-156	Dental Anatomy Lab	2
DLT-250	Foundation of Dental Technology	3
DLT-251	Introduction to Dentures	5
HSC-107	Professionals in Health	2
MAT-731	Introduction to Math	2
		18

Second Semester

DLT-253	Introduction to Partial Dentures	5
DLT-254	Introduction to Crown and Bridge	5
DLT-445	Orthodontics	3
DLT-565	Occlusion	2
SPC-101	Fundamentals of Oral Communication	3
		18

Third Semester

DLT-456	Introduction to Ceramics	5
PSY-111	Introduction to Psychology	3
-------	Humanities Elective	3
		11

Fourth Semester

BCA-189	Microcomputer Literacy	1
DLT-350	Fixed Dental Prosthodontics	5
DLT-351	Removable Dental Prosthodontics	5
DLT-352	Dental Technology Industry	3
DLT-851	DLT Clinic I	1
ENG-105	Composition I	3
		18

Fifth Semester

Advanced course (choose one):		12
DLT-451	Advanced Fixed Dental Prosthodontics	
DLT-452	Advanced Removable Dental Prosthodontics	
		12

Total program credit hours **77**

Diagnostic Assistant (Radiologic Technology)

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Summer

Award
Associate of Applied Science degree

Diagnostic Assistant is designed for Radiologic Technology students in partnership with the Mercy/St. Luke's School of Radiologic Technology.

The two-year radiologic technology technical program is taught through Mercy/St. Luke's, begins each summer and has a separate application process.

Students must complete prerequisite courses at Kirkwood in order to enter the Mercy/St. Luke's program. After they complete the program and receive their certificate in Radiologic Technology, students can transfer those credits back to Kirkwood and receive an Associate of Applied Science degree in Career Studies if the prerequisite courses were taken at Kirkwood.

Career opportunities: hospitals, outpatient clinics, physicians' offices.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BCA-189	Microcomputer Literacy	1
BIO-168	Human Anatomy & Physiology I w/ lab	4
BIO-173	Human Anatomy & Physiology II w/ lab	4
ENG-105	Composition I	3
HSC-115	Medical Terminology	4
MAT-102	Intermediate Algebra	4
PSY-111	Introduction to Psychology	3
SPC-101	Fundamentals of Oral Communication	3
-------	Humanities Elective	3
		29
Program Class List		
-------	Mercy/St. Luke's Technical Courses	55
		55
Total program credit hours		**84**

Upon completion of Mercy/St. Luke's School of Radiologic Technology program, 55 technical credits can be transferred to Kirkwood Community College toward an Associate of Applied Science (A.A.S.) degree.

Diesel Ag Technology

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The Diesel Ag Technology program offers a two-year A.A.S. degree for students entering the workforce, in agriculture equipment or heavy equipment maintenance and repair. Today's technicians not only diagnose and fix mechanical problems, they also must understand and troubleshoot the computer-controlled systems found in diesel engines, power trains and hydraulic systems. The program also provides industry training and professional development for graduates. Currently, more than 30 local businesses employ one or more former students who participated in our program.

Career opportunities: general service technician, specialized service technician, parts manager, warranty administrator, shop coordinator, owner/operator, teacher/trainer, safety inspector.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
AGM-113	Hydraulics I	3
AGM-124	Technical Procedures for Power Mechanics Technicians	3
AGM-405	Ag Engines	3
DSL-355	Fundamentals of Internal Combustion Engines	3
MAT-715	Industrial Math I	3
-------	Communications Elective	3
		18
Second Semester (Spring)		
AGM-103	Agricultural Electrical	3
AGM-406	Fundamentals of Power Transfer	3
AGM-419	Machinery Servicing	3
DSL-143	Fundamentals of Electricity	3
WEL-331	Welding Fundamentals	2
		14
(Summer)		
AGM-932	Internship	2
BUS-161	Human Relations	3
IND-155	Microcomputer Applications	2
		7
Third Semester (Fall)		
AGM-403	Combine Operation and Adjustment	2
AGM-404	Combine Servicing	4
AGM-422	Diesel Fuel Systems	4
AGM-440	Power Shift Transmissions	3
-------	Communications Elective	3
		16
Fourth Semester (Spring)		
AGM-409	Agricultural Diagnosis	13
AGM-414	Fundamentals of Air Conditioning	2
-------	Humanities Elective	3
		18
Total program credit hours		**73**

Diesel Truck Technology

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall

Award
Associate of Applied Science degree
ACE program – 17 months in length.

The Diesel Truck Technology program gives graduates training in diesel truck and diesel-powered equipment maintenance and repair. Courses include engine repair, welding, electricity and electronics, air conditioning, power-trains, mechanical and electronic fuel systems, air brakes, truck and trailer suspensions, and trailer service and repair.

Career opportunities: shop technicians, shop foremen, sales associates and sales managers, service managers, parts technicians and parts managers.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
AGM-113	Hydraulics I	3
AGM-124	Technical Procedures for Power Mechanics	3
DSL-345	Truck Engines	3
DSL-355	Fundamentals of Internal Combustion Engines	3
MAT-715	Industrial Math I	3
-------	Communications Elective	3
		18
Second Semester (Spring)		
AGM-406	Fundamentals of Power Transfer	3
BUS-161	Human Relations	3
DSL-143	Fundamentals of Electricity	3
DSL-543	Truck Clutches	3
WEL-331	Welding Fundamentals	2
-------	Communications Elective	3
		17
Summer Term		
DSL-156	Truck Electronics	3
DSL-308	Cooling Systems	2
DSL-630	Air Brakes and ABS	2
DSL-642	Steering and Suspension	2
DSL-802	Trailer Servicing	3
IND-155	Microcomputer Applications	2
		14
Third Semester (Fall)		
AGM-414	Fundamentals of Air Conditioning	2
AGM-422	Diesel Fuel Systems	4
AGM-932	Internship	2
DSL-424	EFI Engine Systems	4
-------	Humanities Elective	3
		15
Total program credit hours		**64**

Early Childhood Education

Social Sciences/Career Options
1013 Cedar Hall
319-398-4822
www.kirkwood.edu/careeroptons

Entry time
Fall, Spring or Summer

Award
Associate of Arts degree
2 years (5 semesters)

Associate of Science/Career Option degree, Diploma and Paraeducator Certification are also available. See program coordinator for information.

The Early Childhood Education program provides several options for students interested in the care and education of young children. Students in the program have opportunities to participate in a variety of community early childhood programs, including Head Start centers, kindergarten classrooms, voluntary four-year-old programs and child care centers. Whenever possible, experience in inclusive and diverse settings will be encouraged.

After completing the associate degree, students can enter the workforce or transfer to a four-year school. Kirkwood's Early Childhood Education program articulates to four-year institutions statewide, and we provide advising to help students choose courses that meet transfer institutions' requirements.

Career opportunities: lead teachers, assistant teachers, early childhood program directors and child care providers in a variety of early childhood programs including child care centers, child development homes, preschools and Head Start programs.

Required Courses

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ECE-103	Introduction to Early Childhood Education	3
ECE-158	Early Childhood Curriculum I	3
ECE-170	Child Growth & Development	3
ENG-105	Composition I	3
-------	Math/Science Elective	3
		15
Second Semester (Spring)		
ENG-106	Composition II	3
ECE-159	Early Childhood Curriculum II	3
PSY-111	Introduction to Psychology	3
SPC-101	Fundamentals of Oral Communication	3
-------	Elective	3

		15
Third Semester (Fall)		
ECE-133	Child Health, Safety and Nutrition	3
ECE-290	Early Childhood Program Administration	3
EDU-248	Exceptional Persons	3
PSY-121	Developmental Psychology	3
-------	Elective	3
		15
Fourth Semester (Spring)		
ECE-221	Infant/Toddler Care & Education	3
ECE-243	Early Childhood Guidance	3
ECE-262	Early Childhood Field Experience	3
-------	Electives	9
		18
Total program credit hours		**63**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ECE-103	Introduction to Early Childhood Education	3
ECE-133	Child Health, Safety & Nutrition	3
ECE-158	Early Childhood Curriculum I	3
ECE-170	Child Growth & Development	3
ENG-105	Composition I	3
		15
Second Semester (Spring)		
ECE-159	Early Childhood Curriculum II	3
ECE-221	Infant/Toddler Care & Education	3
ECE-243	Early Childhood Guidance	3
ECE-262	Early Childhood Field Experience	3
		12
Third Semester (Fall)		
PSY-121	Developmental Psychology	3
SPC-101	Fundamentals of Oral Communication	3
		6
Total program credit hours		**33**

Early Childhood Paraeducator Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ECE-103	Introduction to Early Childhood Education	3
ECE-133	Child Health, Safety & Nutrition	3
ECE-158	Early Childhood Curriculum I	3
		9
Second Semester (Spring)		
ECE-243	Early Childhood Guidance	3
EDU-110	Exploring Teaching	3
EDU-119	Behavior Management	3
		9
Total program credit hours		**18**

Electroneurodiagnostic Technology

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall (every odd-numbered year)

Award
Associate of Applied Science degree
2 years (5 semesters)

Electroneurodiagnostics is the study and recording of electrical activity in the brain and nervous system. An Electroneurodiagnostic (END) Technologist uses an electroencephalograph (EEG) instrument to record electrical impulses transmitted by the brain and nervous system. These recordings assist physicians in the diagnosis of a variety of neurological problems—from headaches and dizziness to seizure disorders, strokes, degenerative brain diseases and sleep disorders.

Career opportunities: hospitals, outpatient clinics, sleep labs.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BCA-189	Microcomputer Literacy	1
BIO-168	Human Anatomy & Physiology I with Lab	4
END-100	Introduction to Electroneurodiagnostics	2.5
HSC-107	Professionals in Health	2
HSC-117	Basic Medical Terminology	2.5
HSC-210	Health Skills I	1
MAT-731	Introduction to Math	2
		15
Second Semester		
BIO-173	Human Anatomy & Physiology II with Lab	4
END-200	Applied Electronics & Instrumentation	1.5
END-310	EN Technical Science	7
END-330	EN Clinical Science	2
-------	Humanities Elective	3
		17.5
Third Semester		
END-400	Evoked Potentials I	1
END-810	EN Clinic I	6
SPC-101	Fundamentals of Oral Communication	3

		10
Fourth Semester		
END-420	Evoked Potentials II	2
END-830	EN Clinic II	7.5
ENG-105	Composition I	3
PSY-111	Introduction to Psychology	3
		15.5
Fifth Semester		
END-850	EN Clinic III	5.5
END-870	Sleep Technology	6.5
		12
Total program credit hours		**70**

Electronics Engineering Technology

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The Electronics Engineering Technology program balances theory and practical applications to help students design, test, analyze, operate and troubleshoot complex electronic systems. The program integrates LabVIEW,® a graphic-based programming language used by many of the major technology-based employers for data acquisition, process control and automated test instrumentation. Students can transfer more than 40 EET credit hours to UNI toward a B.S. in Electrical and Information Engineering Technology. The curriculum may also be modified to maximize credits transferable to BSEE and BSEET degree programs. EET graduates may also seek certification by the Electronics Technicians Association, International Inc.

Career opportunities: field-service, electronics design, electronics testing, biomedical electronics, avionics, printed circuit board computer-aided design, technical writer, computer-integrated manufacturing, advanced industrial manufacturing, electronic systems repair, computer repair, controls, security systems, radio communications, component testing, instrumentation.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ELT-277	Electronic Practices	3
ELT-345	Electric Circuits I	5
MAT-745	Technical Mathematics I	4
-------	Communications Elective	3
		15
Second Semester (Spring)		
ELT-341	Electric Circuits II	5
ELT-517	Active Devices I: Transistor Amplifiers	6
MAT-746	Technical Mathematics II	4
-------	Communications Elective	3
		18
Summer Term		
ELT-309	Digital Circuits	3
OR		
EGT-420	PLTW - Digital Electronics	3
ELT-518	Active Devices II: Operational Amplifiers	3
-------	Social Science Elective	3
-------	Humanities Elective	3
		12
Third Semester (Fall)		
ELT-299	Introduction to LabView	3
ELT-520	Communication Electronics I	4
ELT-616	Microprocessors I	4
ELT-856	Communication Projects	3
PHY-230	Technical Physics I	3
		17
Fourth Semester (Spring)		
ELT-521	Communication Electronics II	4
ELT-621	Microprocessors II	4
ELT-845	Design Projects	4
PHY-232	Technical Physics II	3
		15
Total program credit hours		**77**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ELT-277	Electronic Practices	3
ELT-345	Electric Circuits I	5
MAT-745	Technical Mathematics I	4
-------	Communications Elective	3
		15
Second Semester (Spring)		
ELT-341	Electric Circuits II	5
ELT-517	Active Devices I: Transistor Amplifiers	6
MAT-746	Technical Mathematics II	4
-------	Communications Elective	3
		18
Third Semester (Fall)		
ELT-309	Digital Circuits	3
OR		
EGT-420	PLTW-Digital Electronics	3
ELT-518	Active Devices II: OP AMPS	3
-------	Social Science Elective	3

-------	Humanities Elective	3
		12

Total program credit hours **45**

Energy Production and Distribution Technologies

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)

Students in this program learn about complex mechanical/electrical systems, including megawatt windmills, steam driven turbines and solar fields that turn sunlight into electricity.

Graduates of this program can go on to complete a four-year degree at UNI.

Career opportunities: windmill technician, boiler operator, boiler technician.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
ELT-146	National Electrical Code and Electrical Wiring	5
ELT-304	Introduction to Electrical Circuits	4
MAT-109	Industrial Maintenance Math Fundamentals	3
MAT-718	Industrial Maintenance Math	3
-------	Communications Elective	3
		18
Second Semester		
ELT-152	Industrial Maintenance I	4
ELT-211	Motor Control Circuits	4
ELT-224	Motors and Transformers	5
PHY-180	Applied Physics I	2
-------	Communications Elective	3
		18
Summer Semester		
BCA-189	Microcomputer Literacy	1
OR		
CSC-110	Introduction to Computers	3
ELT-798	Fundamentals of Hydraulic & Pneumatic Systems	5
-------	Humanities Elective	3
		9
Third Semester		
ELE-400	Photovoltaic Systems Installer	2
ELT-100	Introduction to PLC Wiring & Troubleshooting	1
ELT-101	Introduction to PLC Programming & Basic Discrete Control	1
ELT-105	Introduction to Programmable Logic Controllers	1
ELT-127	Introduction to Intermediate PLC Instruction & Function	1
ELT-128	Introduction to Solid State Motor Control Techniques	1
ELT-137	Introduction to Solid State Motor Control Wiring & Troubleshooting	1
WTT-300	Wind Turbine Construction	2
WTT-350	Wind Turbine Commissioning	2
WTT-400	Wind Turbine Operations	3
-------	Social Science Elective	3
		18
Fourth Semester		
ELT-438	Data Acquisition & Analysis	2
PWL-300	Smart Grid Design and Technology	1
PWL-325	Electrical Distribution Systems	1
PWL-330	Power Cable Materials and Installation	1
UTL-260	High Pressure Boilers	2
UTL-270	Boiler and Chiller Inspection and Maintenance	1
WTT-450	Wind Turbine Maintenance	4
WTT-500	Wind Turbine Troubleshooting	4
		16

Total program credit hours **79**

Entry-Level Firefighter

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall or Spring

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Diploma and certificate options are available. See advisor for information.

Certification

Firefighter I, EMT-B (state and national)

The Entry-Level Firefighter curriculum can help recent high school graduates or volunteers improve their employment prospects. This program features some evening and online classes.

Career opportunities: emergency medical care, fire prevention education, training firefighters, maintenance and specialization in hazardous materials.

Degree Requirements

Course Number	Course Title	Credit Hours

First Semester (Fall)

BCA-189	Microcomputer Literacy	1
ENG-101	Elements of Writing	3
FIR-127	Fire Behavior and Combustion	3
FIR-150	Fire Detection and Suppression Systems	3
FIR-213	Principles of Emergency Services	3
		13

Second Semester (Spring)

FIR-110	History and Philosophy of the Fire Service	2
FIR-124	Building Construction	3
FIR-130	Fundamentals of Fire Prevention	3
FIR-400	Fire & Emergency Services Safety & Survival	3
MAT-102	Intermediate Algebra	4
		15

Summer Term

FIR-140	Firefighter I - Unit I	2
FIR-141	Firefighter I - Unit II	2
FIR-142	Firefighter I - Unit III	3
FIR-289	Firefighter I - Unit IV	2
		9

Third Semester (Fall)

EMS-200	Emergency Medical Technician	8
PSY-111	Introduction to Psychology	3
-------	One Fire Science Management technical course	3
		14

Fourth Semester (Spring)

FIR-180	Chemistry of Hazardous Materials	3
SPC-101	Fundamentals of Oral Communication	3
-------	Humanities Elective	3
-------	Two Fire Science Management technical courses	6
		15

Degree Total program credit hours **66**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
BCA-189	Microcomputer Literacy	1
ENG-101	Elements of Writing	3
FIR-127	Fire Behavior and Combustion	3
FIR-150	Fire Detection and Suppression Systems	3
FIR-213	Principles of Emergency Services	3
		13
Second Semester (Spring)		
EMS-200	Emergency Medical Technician	8
FIR-180	Chemistry of Hazardous Materials	3
PSY-111	Introduction to Psychology	3
		14
Summer Term		
FIR-140	Firefighter I - Unit I	2
FIR-141	Firefighter I - Unit II	2
FIR-142	Firefighter I - Unit III	3
FIR-289	Firefighter I - Unit IV	2
		9
Total program credit hours		**36**

Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
FIR-140	Firefighter I - Unit I	2
FIR-141	Firefighter I - Unit II	2
FIR-142	Firefighter I - Unit III	3
FIR-289	Firefighter I - Unit IV	2
		9
Second Semester (Spring)		
EMS-200	Emergency Medical Technician	8
FIR-110	History & Philosophy of the Fire Service	2
FIR-213	Principles of Emergency Services	3
		13
Total program credit hours		**22**

Financial Services

Business & Information Technology

203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time

Fall, Spring or Summer

Award

Associate of Applied Science degree
2 years (4 semesters)

The Finance Services program is designed for students seeking careers with financial institutions and for those already at financial institutions wishing to attain advanced positions. This program provides an internship opportunity to give students real-world experience.

Career opportunities: personal banker, management trainee, credit analyst, customer service representative, financial advisor, trust representative, loan officer.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
FIN-101	Principles of Banking	3
MAT-140	Finite Math	3
MKT-180	Customer Service Strategies	1
SPC-101	Fundamentals of Oral	3

	Communication	
		16

Second Semester

ACC-152	Financial Accounting	4
ECN-120	Principles of Macroeconomics	3
ENG-108	Composition II: Technical Writing	3
FIN-121	Personal Finance	3
MKT-140	Principles of Selling	3
		16

Third Semester

ACC-156	Managerial Accounting	4
ACC-191	Financial Analysis	3
BUS-290	Employment Search and Workplace Success	1
ECN-130	Principles of Microeconomics	3
FIN-110	Money and Banking	3
-------	Humanities or History/Cultures	3
		17

Fourth Semester

BUS-185	Business Law I	3
BUS-932	Internship	3
FIN-130	Principles of Finance	3
MGT-145	Human Relations in Management	3
-------	Program	5
		17

Total program credit hours **66**

Floral Careers

Ag Sciences
Horticulture/Floral Careers
319-398-5441
www.kirkwood.edu/agrisciences

Entry time
Fall

Award
Diploma
1 year (2 semesters, 1 summer)

The Floral Careers program provides students with advanced training in floral design, plant identification and care, retail flower shop operations, advertising, visual merchandising, inventory control, and order processing. Within the Floral Careers program, there is a major emphasis in wedding and funeral designs, purchasing and interior plant maintenance for the retail florist.

Career opportunities: floral designer, office management for small businesses, greenhouse specialist, production and distribution of floral products, interior plant maintenance, retail florist owner/manager, marketing/buying, wedding consultant, merchandising and display artist, wholesale florist.

Degree Requirements

Course Number	Course Title	Credit Hours

Fall Term I

AGC-932	Internship	3
AGF-120	Floral Plant Identification and Care I	2
AGF-130	Floral Careers Computer Literacy	2
AGF-140	Floral Design I	3
AGF-150	Retail Flower Shop Operation I	3
AGF-160	Event Planning I	1
BUS-161	Human Relations	3
		17

Spring Term I

AGC-932	Internship	4
AGF-122	Floral Plant Identification and Care II	2
AGF-135	Floral Careers Plant Propagation	2
AGF-142	Floral Design II	3
AGF-152	Retail Flower Shop Operation II	4
AGF-162	Event Planning II	1
COM-723	Workplace Communications	3
		19

Summer Term III

ADM-133	Business Math and Calculators	3
AGF-144	Floral Design III	3
AGF-154	Retail Flower Shop Operation III	2
AGF-164	Event Planning III	3
		11

Total program credit hours **47**

Food Service Assistant

Hospitality Arts
The Hotel at Kirkwood Center
319-848-8770
www.kirkwood.edu/hospitality

Entry time
Fall or Spring

Award
Diploma
1 year (2 semesters)

The Food Service Assistant program provides students with the technical knowledge and skills required to enter the quantity food preparation and service industry. Students prepare for their careers through practical experience in management, food preparation and service. Students are required to purchase uniforms and tools to use when in labs and kitchens.

Students assist in the operation of The Class Act, a full-service restaurant at The Hotel at Kirkwood Center. The restaurant features fine dining for hotel and conference center guests, Kirkwood staff and the public.

Food service workers assist cooks and chefs with the daily operations of kitchen and dining facilities. They perform a variety of tasks involved in preparing hot and cold food.

Career opportunities: food preparation worker, cooking assistant, cafeteria attendant.

Required Courses

Course Number	Course Title	Credit Hours
First Semester		
HCM-100	Sanitation and Safety	2
HCM-109	Kitchen Essentials	1.5
HCM-138	Food Fundamentals	3
HCM-147	Culinary Techniques	1.5
HCM-260	Hospitality Math	3
HCM-324	College Orientation	1
HCM-326	Basic Hospitality Communication	3
		15
Second Semester		
BUS-290	Employment Search/Workplace Success	1
CSC-110	Introduction to Computers	3
HCM-117	Bakery Basics	3
HCM-133	Fabrication I	1.5
HCM-231	Nutrition	2
HCM-269	Garde Manager	1.5
MGT-145	Human Relations in Management	3
		15
Total program credit hours		**30**

Geographic Information Systems

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters)
Certificate option available. See advisor for information.

Geographic Information Systems is a powerful set of integrated technology tools intended to assist with collection, storage, manipulation, analysis and visualization of real-world spatial data. This information is used in business and marketing, resource management, mapping, environmental management and other industries. GIS exploded into one of the fastest growing and most widely adopted technologies in the information age.

Career opportunities: GIS technician, GIS data specialist, GIS specialist, GIS mapping technician, engineering technician, GIS mapping assistant, GIS application specialist, cartographer, photogrammerist, surveyor technician.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
GIS-110	Survey of Geographic Information Systems	3
GIS-112	Introduction to ArcGIS	3
MAT-107	Survey of Math	4
		16
Second Semester		
CIS-128	Programming Concepts	3
GIS-120	Geospatial Data Collection	3
GIS-122	Governmental GIS	3
MAT-155	Statistical Ideas	3
MGT-145	Human Relations in Management	3
-------	Elective	3
		18
Third Semester		
CAD-105	CAD I	2
CIS-307	Introduction to Databases	3
GIS-210	Mapping for Decision Making	3
GIS-212	Managing GIS Projects	3
-------	Elective	3
-------	Humanities Elective	3
		17
Fourth Semester		
BUS-290	Employment Search and Workplace Success	1
ENG-106	Composition II	3
OR		
ENG-108	Composition II: Technical Writing	3
OR		
SPC-101	Fundamentals of Oral Communication	3
GIS-214	Internet Mapping Services	3
GIS-240	GIS Projects	3
OR		
BUS-932	Internship	
MKT-110	Principles of Marketing	3
-------	Electives	2
		15
Total program credit hours		**66**

Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
GIS-110	Survey of Geographic Information Systems	3
GIS-112	Introduction to ArcGIS	3
GIS-120	Geospatial Data Collection	3
		9
Second Semester		
CIS-307	Introduction to Databases	3
GIS-210	Mapping for Decision Making	3
GIS-XXX	Elective	3

		9
Total program credit hours		**18**

Golf Course and Athletic Turfgrass Management

Ag Sciences

Horticulture/Floral Careers
319-398-5441
www.kirkwood.edu/agrisciences

Entry time

Summer or Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Diploma option available. See advisor for information.

Through the classroom and extensive lab experiences, you'll learn design, installation and maintenance of turfgrass systems; understand cultural and chemical turf controls; install, design and repair irrigation systems; and operate and maintain turf equipment. You'll also focus on computer literacy, team building, club activities and leadership responsibilities. You'll have the best hands-on opportunities turfgrass education has to offer at our lab facilities.

Career opportunities: golf course assistant superintendent; athletic field manager; grounds director; lawn care company foreman; sales representative for an equipment, fertilizer, chemical, seed, sod or spray company.

Degree Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGH-110	Success in Horticulture	1
AGH-112	Introduction to Turfgrass Management	3
AGH-123	Woody Plant Materials	3
AGH-144	Landscape Construction and Design	3
AGH-236	Plant Material Maintenance	3
AGH-411	Grounds Computer Applications	3
------	Humanities Requirement	3
		19
Spring Term I		
AGC-313	Leadership in Agriculture	1
AGH-102	Horticulture Math	3
AGH-141	Equipment Operations	3
AGH-253	Insects and Diseases	3
AGH-279	Botany for Horticulture	2
COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	3
		15
Summer		
AGC-932	Internship	3
		3
Fall Term II		
AGH-165	Irrigation Installation and Repair	2
AGH-282	Pesticide Application Certification - Horticulture	1
AGH-400	Athletic Field Maintenance	3
AGH-405	Golf Course Maintenance	3
BUS-161	Human Relations	3
COM-744	Oral Communication in the Workplace	3
		15
Spring Term II		
AGH-152	Landscape Design Techniques	3
AGH-163	Irrigation Design	2
AGH-211	Advanced Turfgrass Management	3
AGH-238	Soil and Water Conservation	3
AGH-425	Grounds Maintenance	3
		14
Total program credit hours		**66**

Diploma Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGH-110	Success in Horticulture	1
AGH-112	Introduction to Turfgrass Management	3
AGH-123	Woody Plant Materials	3
AGH-141	Equipment Operations	3
AGH-144	Landscape Construction and Design	3
		13
Spring Term I		
AGH-102	Horticulture Math	3
AGH-253	Insects and Diseases	3
AGH-279	Botany for Horticulture	2
AGH-405	Golf Course Maintenance	3
COM-723	Workplace Communications	3
		14
Fall Term II		
AGH-165	Irrigation Installation and Repair	2
AGH-211	Advanced Turfgrass Management	3
AGH-425	Grounds Maintenance	3
BUS-161	Human Relations	3
		11
Total program credit hours		**38**

Graphic Communication Technology

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The Graphic Communication Technology program prepares students for employment in the technical production area of the printing and graphic communication industry. Following an introduction to the graphics industry, the core program develops students' practical knowledge and provides hands-on experience with current standards in graphic communication. Students learn design, layout, image manipulation and illustration principles to applying final graphics used in 2D design, print, Web and motion graphics, plus receive extensive experience working on Apple computers using industry standard software from Adobe.

Students may transfer credits from this program to Ashford University (graphic design) or the University of Northern Iowa towards a bachelor of arts in graphic communication technology.

Career opportunities: printing and publishing companies, advertising agencies, Web design, in-house graphics, design and marketing departments.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ADM-133	Business Math and Calculators	3
ART-301	Design Fundamentals	3
ENG-101	Elements of Writing	3
GRA-101	Survey of Graphic Communications	3
MGT-145	Human Relations in Management	3
		15
Second Semester (Spring)		
ART-133	Drawing	3
ART-184	Photography	3
CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
MKT-150	Principles of Advertising	3
		15
Summer		
GRA-127	Illustrator I	3
GRA-131	Digital Layout	3
		6
Third Semester (Fall)		
CIS-207	Fundamentals of Web Programming	3
GRA-128	Illustrator II	3
GRA-132	Digital Layout II	3
GRA-140	Digital Imaging	3
GRA-195	Introduction to Web Media	3
		15
Fourth Semester (Spring)		
GRA-141	Digital Imaging II	3
GRA-152	Web Design II	4.5
GRA-153	Web Media II	3
GRA-192	Production Techniques	4.5
GRA-199	Graphic Communication Job Shadow	1
		16
Total program credit hours		**67**

Health Information Technology

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall

Award
Associate of Applied Science degree
2 years (5 semesters)
Medical Coding diploma option
1 year (3 semesters)

Health information technology (HIT) professionals collect, analyze and manage patient health information, then communicate with patients, physicians, nurses, administrators, lawyers and insurance companies about the information in these records.

Health information technicians assemble patient health information and make sure medical records are complete. HITs code each diagnosis and procedure and may communicate with physicians to clarify diagnoses or obtain additional information. HITs provide reliable and valid information that drives the health care industry.

Career opportunities: hospitals, long-term care facilities, physicians' offices, correctional facilities, home health agencies, mental health agencies, insurance companies, computer software companies.

Degree Requirements

Course Number	Course Title	Credit Hours
Prerequisites		
BIO-168	Human Anatomy & Physiology I with Lab	4
CSC-110	Introduction to Computers	3
HSC-115	Medical Terminology	4
		11
First Semester		
BIO-173	Human Anatomy & Physiology II	4

	with Lab	
HIT-220	Introduction to Medical Coding	2.5
HIT-360	Introduction to HIT	3
HSC-107	Professionals in Health	2
MAT-731	Introduction to Math	2
		13.5
Second Semester		
BCA-213	Intermediate Computer Business Applications	3
HIT-240	Advanced Coding & Classification	3
HIT-495	Medical Office Management	2.5
HIT-550	Professional Practice Experience I	2.5
HSC-142	Elements of Pharmacology	1
		12
Third Semester		
HIT-280	CPT-4 Coding	3
HIT-291	Reimbursement Methods	2.5
HIT-551	Professional Practice Experience II	1
HSC-217	Introduction to Pathology	3
		9.5
Fourth Semester		
ENG-105	Composition I	3
HIT-350	Health Information Systems	2.5
HIT-420	Legal Aspects of Health Information	2
HIT-431	Quality Improvement	3
HIT-552	Professional Practice Experience III	3
		13.5
Fifth Semester		
HIT-450	Health Statistics	2
HIT-490	Health Management & Supervision	3.5
HIT-553	Professional Practice Experience IV	2
PSY-111	Introduction to Psychology	3
SPC-101	Fundamentals of Oral Communication	3
OR		
COM-222	Communication for Health Care Professionals	3
-------	Humanities Elective	3
		17.5
Total program credit hours		**77**

Medical Coding Diploma

Course Number	Course Title	Credit Hours
Prerequisites		
BIO-168	Human Anatomy and Physiology I with Lab	4
CSC-110	Introduction to Computers	3
HSC-115	Medical Terminology	4
		11
First Semester		
BIO-173	Human Anatomy and Physiology II with Lab	4
HIT-220	Introduction to Medical Coding	2.5
HIT-360	Introduction to HIT	3
HSC-107	Professionals in Health	2
MAT-731	Introduction to Math	2
		13.5
Second Semester		
BCA-213	Intermediate Computer Business Applications	3
HIT-240	Advanced Coding and Classification	3
HIT-495	Medical Office Management	2.5
HIT-550	Professional Practice Experience I	2.5
HSC-142	Elements of Pharmacology	1
		12
Third Semester		
HIT-280	CPT-4 Coding	3
HIT-291	Reimbursement Methods	2.5
HIT-551	Professional Practice Experience II	0.5
HSC-217	Introduction to Pathology	3
		9.5
Total program credit hours		**46**

Horse Science Technology

Ag Sciences

Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time

Fall or Spring

Award

Associate of Applied Science degree
2 years (4 semesters), plus internship

The Horse Science Technology program prepares students for a variety of positions in equine enterprises. More than 50 percent of instruction takes place in a laboratory setting using the wide variety of Kirkwood-owned horses or horses from outside the campus. Advanced students can train their own horses or horses sponsored for training.

The first year focuses on experiencing the equine industry. Studies include general health care, horsemanship, facility maintenance and mechanics. The second year allows the student to choose a course of study in equine training or equine business management. All students will take the core courses in conformation, lameness, genetics and breeding management.

Career opportunities: grooms, assistant stable managers/trainers, sales associates in feed and tack stores, equine marketing assistants, equine health care assistants, owners of boarding stables, breeding farms or horse dealerships.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
AGC-130	Mathemathics I - Agriculture	3
AGC-313	Leadership in Agriculture	1
AGE-104	Total Fitness for the Rider	1
AGE-108	Horsemanship I	3
AGE-169	Equine Fitting and Grooming	3
AGE-185	Equine Facilities Maintenance and Mechanics	3
AGE-209	Equine Anatomy & Physiology	2
-------	Humanities Requirement	3
		19
Second Semester (Spring)		
AGC-103	Ag Computer	3
AGE-109	Horsemanship II	3
AGE-170	Health and Performance Management of the Horse	3
AGE-172	Equine Ground Work	2
AGE-211	Equine Business Management I	3
COM-744	Oral Communication in the Workplace	3
		17
Third Semester (Fall)		
AGE-121	Horse Evaluation	3
AGE-130	Horse Nutrition	3
AGE-212	Equine Business Management II	3
AGE-261	Legs and Hoof	3
AGE-290	Horse Projects	2
AND		
AGE-230	Training 1	3
OR		
-------	AGB, MKT or MGT Elective	
		17
Fourth Semester (Spring)		
AGC-210	Employment Seminar	1
AGE-202	Equine Genetics and Breeding Management	3
AGE-290	Horse Projects	2
AND		
AGE-231	Training II *or* 5 credits from AGB, MKT or MGT courses	3
OR		
-------	AGB, MKT or MGT Elective	
BUS-161	Human Relations	3
OR		
MGT-145	Human Relations in Management	3
COM-723	Workplace Communications	3
		15
Summer Term		
AGC-932	Internship	4
		4
Total program credit hours		**71**

Hotel Management

Hospitality Arts
The Hotel at Kirkwood Center
319-848-8770
www.kirkwood.edu/hospitality

Entry time
Fall

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Diploma
1 year (2 semesters, 1 summer)

The goal of this program is to prepare students to work in entry-level positions of responsibility within the hospitality industry. This industry has been expanding as part of the growing service economy, and there is a demand for individuals with a college education and work experience.

Students in this program learn about day-to-day operations of a lodging facility from practical experience working in The Hotel at Kirkwood Center. Course work exposes students to food and dining, management, hotel operations and other business topics.

Internships and on-the-job training are also important components of this program to help prepare students to work in the field. Students are required to complete an internship at The Hotel at Kirkwood Center, which is a full-service hotel. Students are required to purchase uniforms when working at The Hotel at Kirkwood Center.

Students may participate in the Disney Institute college program to complete part of their internship requirements. This exciting program is a paid internship that offers students unique benefits while working, learning and living at the Walt Disney Resort in Orlando, Florida.

Career opportunities: front desk supervisor, concierge, housekeeping supervisor, room service manager, assistant restaurant manager, bar supervisor, laundry supervisor, or banquet manager.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	3
CSC-110	Introduction to Computers	3
HCM-100	Sanitation and Safety	2
HCM-260	Hospitality Math	3
OR		
MAT-140	Finite Math	3
HCM-324	College Orientation	1
HCM-600	Introduction to Lodging Operations	2
HCM-601	Housekeeping and Laundry Operations	3

		17

Second Semester

HCM-204	Service Techniques	3
HCM-279	Hospitality Accounting	3
OR		
ACC-152	Financial Accounting	4
HCM-330	Hospitality Personnel Management	3
HCM-597	Front Office Management	4
HCM-602	Introduction to Food and Bar Operations	3
		16

Summer after first year

HCM-933	Hotel Externship	3
		3

Third Semester

HCM-213	Service Management	4
HCM-310	Hospitality Law	3
HCM-599	Engineering and Risk Management	1
HCM-932	Internship	2
MGT-145	Human Relations in Management	3
OR		
PSY-111	Introduction to Psychology	3
MKT-110	Principles of Marketing	3
		16

Fourth Semester

COM-744	Oral Communication/Workplace	3
OR		
ENG-106	Composition II	3
FLS-118	Spanish for Professionals: Hospitality	3
HCM-251	Purchasing, Receiving and Inventory	2
HCM-603	Hotel Sales and Catering	3
HCM-614	Leadership in Hospitality	3
		14

Total program credit hours **66**

Hotel Management Diploma

Course Number	Course Title	Credit Hours
First Semester		
ADM-928	Independent Study (E-Portfolio)	1
COM-723	Workplace Communication	3
CSC-110	Introduction to Computers	3
HCM-600	Introduction to Lodging Operations	2
MGT-145	Human Relations in Management	3
SPC-112	Public Speaking	3
		15
Second Semester		
ADM-928	Independent Study (E-Portfolio)	1
BUS-928	Independent Study (American Government)	3
HCM-330	Hospitality Personnel Management	3
HCM-597	Front Office Management	4
HCM-602	Introduction to Food and Bar Operations	3
MGT-139	Effective Team Building for Managers	1
MKT-180	Customer Services Strategies	1
		16
Third Semester		
HCM-932	Internship (At The Hotel)	2
MGT-137	Developing Leadership Skills	1
		2
Total diploma credit hours		**34**

Humane Officer Training

Ag Sciences
Animal Health Technology
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall

Award
Associate of Applied Science degree
2 years (5 semesters)

Communities across the nation are recognizing the need for well-trained humane law enforcement officers. Until recently, many animal care and control workers entered the field with little or no specialized training. Increased interaction with the public, public demand for humane animal care, limited euthanasia and adoption of shelter animals has put new demands for knowledgeable and professional shelter employees.

From humane investigation to interviewing witnesses, collecting evidence and report writing, the professional humane officer understands public safety and the law, possesses excellent communication skills, and demonstrates a high level of integrity, dependability, stress tolerance and self-control.

Career opportunities: municipal animal control agencies, non-profit humane societies, animal welfare inspector.

Required Courses

Course Number	Course Title	Credit Hours
First Semester (Fall)		
AGV-103	Introduction to Veterinary Science	3
AGV-155	Shelter Administration and Computer Applications	3
CRJ-100	Introduction to Criminal Justice	3
ENG-105	Composition I	3
PSY-111	Introduction to Psychology	3
		15

Second Semester (Spring)		
AGV-190	Animal Welfare and Shelter Management	4
AGV-191	Animal Behavior and Restraint	3
AGV-192	Shelter Medicine	3
AGV-193	Vehicle Safety and Operations	1
AGV-194	Disaster Animal Response Training	1
-------	Elective	3
		15
Summer Term		
AGC-932	Internship	4
		4
Third Semester (Fall)		
AGC-210	Employment Seminar	1
AGV-158	Veterinary Law and Ethics	3
AGV-195	Large Animal Welfare	3
AGV-196	Euthanasia Technician	1
CRJ-133	Constitutional Criminal Procedure	3
ENG-108	Composition II: Technical Writing	3
-------	Humanities	3
		17
Fourth Semester (Spring)		
AGV-197	Basic Animal Investigation Techniques	3
AGV-198	Wildlife ID and Management	2
AGV-199	Veterinary Forensics	3
CRJ-141	Criminal Investigation	3
CRJ-202	Cultural Awareness for Criminal Justice Practitioners	3
-------	Elective	3
		17
Total program credit hours		**68**

HVAC Installer

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Diploma
1 year (2 semesters)

Certification

CFC Refrigerant Handling Certification
NCCER HVAC Level 1 Certification
NCCER Electrical Level 1 Certification

The HVAC Installer program prepares students to enter the skilled trade of heating, ventilation and air conditioning installation. The program focuses primarily on residential and light commercial equipment and covers installation procedures, code requirements, electrical applications and refrigerant handling procedures. The one-year, hands-on program also includes system design and HVAC component operation.

Career opportunities: installation positions, general maintenance jobs, sales and service positions.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
HCR-410	Electrical Applications I	3
HCR-605	HVAC Installation I	5
HCR-710	Fundamentals of Plan and Print Reading	2
HCR-932	Internship	1
MAT-716	Industrial Math II	3
COM-723	Workplace Communications	3
OR		
COM-744	Oral Communication in the Workplace	3
		17
Second Semester (Spring)		
HCR-450	Electrical Applications for HVAC II	3
HCR-600	Pipe Joining Methods	3
HCR-610	HVAC Installation II	7
HCR-932	Internship	1.5
MGT-145	Human Relations in Management	3
		17.5
Total program credit hours		**34.5**

Industrial Maintenance and HVAC Technology

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The first year of the Industrial Maintenance & HVAC Technology program provides extensive coverage of electricity and electro-mechanical devices such as motors, relays and transformers. Additional subjects include electrical wiring, basic electronics, motor controls, refrigeration, air conditioning, computer applications and industrial hydraulics.

Second-year students focus on commercial climate controls, advanced heating, air conditioning and refrigeration systems. Additional subjects include industrial electronic devices such as programmable logic controllers and industrial motor drives.

Career opportunities: industrial plant maintenance, process controls and instrumentation, air conditioning and refrigera-

tion, electrical wiring, building automation systems and controls.

Degree Requirements

Course Number	Course Title	Credit Hours
First Year – First Semester		
ELT-146	National Electrical Code and Electrical Wiring	5
ELT-304	Introduction to Electrical Circuits	4
MAT-109	Industrial Maintenance Math Fundamentals	3
MAT-718	Industrial Maintenance Math	3
-------	Communications Elective	3
		18
First Year – Second Semester		
ELT-152	Industrial Maintenance I	4
ELT-211	Motor Control Circuits	4
ELT-224	Motors and Transformers	5
PHY-180	Applied Physics I	2
-------	Communications Elective	3
		18
Summer Session		
ELT-100	Introduction to PLC Wiring and Troubleshooting	1
ELT-101	Introduction to PLC Programming and Basic Discrete Control	1
ELT-105	Introduction to Programmable Logic Controllers	1
ELT-127	Introduction to Intermediate PLC Instruction and Function	1
ELT-128	Introduction to Solid State Motor Control Techniques	1
ELT-137	Introduction to Solid State Motor Control Wiring and Troubleshooting	1
MFG-145	Light Machining for Maintenance Trades	4
		10
Second Year – First Semester		
BCA-189	Microcomputer Literacy	1
CON-355	Industrial Framing & Construction	3
ELT-162	Industrial Maintenance Trades	4
PLU-160	Plumbing for Maintenance Trades	3
-------	Humanities or History/Cultures elective	3
		14
Second Year – Second Semester		
ELT-798	Fundamentals of Hydraulics & Pneumatics	5
WEL-208	Introduction to Fabrication	2
WEL-400	Welding for Maintenance	4
-------	Social Science Elective	3
		14
Total program credit hours		**74**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Year – First Semester		
ELT-146	National Electrical Code and Electrical Wiring	5
ELT-304	Introduction to Electrical Circuits	4
MAT-109	Industrial Maintenance Math Fundamentals	3
MAT-718	Industrial Maintenance Math	3
-------	Communications Elective	3
		18
First Year – Second Semester		
ELT-152	Industrial Maintenance I	4
ELT-211	Motor Control Circuits	4
ELT-224	Motors and Transformers	5
PHY-180	Applied Physics I	2
-------	Communications Elective	3
		18
Summer Session		
ELT-100	Introduction to PLC Wiring and Troubleshooting	1
ELT-101	Introduction to PLC Programming and Basic Discrete Control	1
ELT-105	Introduction to Programmable Logic Controllers	1
ELT-127	Introduction to Intermediate PLC Instruction and Function	1
ELT-128	Introduction to Solid State Motor Control Techniques	1
ELT-137	Introduction to Solid State Motor Control Wiring and Troubleshooting	1
MFG-145	Light Machining for Maintenance Trades	4
		10
Total program credit hours		**46**

Interior Design

Business & Information Technology

203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time

Fall

Award

Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The Interior Design program provides education and training for people interested in a career in kitchen, residential or contract design. Graduates of this program are prepared for

positions in designer sales, marketing and middle management.

This program features a combination of classroom instruction and on-the-job training in design establishments. Students study all facets of this challenging field including general education, business administration, technical courses in interior design skills and computer aided design (CAD).

Career opportunities: sales, interior designer, manufacturer's representative, furniture, window treatments, wall coverings, floor coverings, kitchen dealerships, residential retail sales, contract design, commercial furniture, dealerships.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CSC-110	Introduction to Computers	3
INT-301	Design Fundamentals	3
INT-303	Historical Interiors I	3
MGT-145	Human Relations in Management	3
MKT-140	Principles of Selling	3
		15
Second Semester (Spring)		
ACC-100	Accounting Concepts for Business Planning	1
ADM-133	Business Math and Calculators	3
BUS-290	Employment Search and Workplace Success	1
INT-300	Textiles for Interior Design	3
INT-302	Color Theory	3
INT-305	Sketchup for Interior Design	1
INT-306	Photoshop for Interior Design	1
- - - - - - -	Humanities *or*	3
MKT-187	International Perspectives in Marketing	
		16
Summer		
INT-310	Architectural Graphics	4
		4
Third Semester (Fall)		
INT-107	Kitchen and Lighting Design	4
INT-108	CAD for Interior Designers I	3
INT-110	Interior Design I	4
SPC-101	Fundamentals of Oral Communication	3
COM-723	Workplace Communications *or*	3
ENG-105	Composition I	
		17
Forth Semester (Spring)		
INT-111	Interior Design II	4
INT-113	Portfolio Assessment	1
INT-118	CAD for Interior Designers II	3
INT-313	Contract Design	4
INT-932	Internship	3
		15
Total program credit hours		**67**

Landscape Construction and Design

Ag Sciences
Horticulture/Floral Careers
319-398-5441
www.kirkwood.edu/agrisciences

Entry time
Summer or Fall

Award
Associate of Applied Science degree
2 years (4 semesters)

A well designed landscape adds beauty and value to any home or business. Proper installation of that design ensures that it will provide a functional outdoor space for years to come. In the Landscape Construction & Design program, design students can focus on creating those designs utilizing plant knowledge and artistic principles. Students will develop problem-solving skills as well as work with computer design software. New trends in sustainability and landscape maintenance will also be explored.

Career opportunities: landscape designer, nursery sales person, landscape project manager.

Degree Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGH-110	Success in Horticulture	1
AGH-112	Introduction to Turfgrass Management	3
AGH-144	Landscape Construction and Design	3
AGH-152	Landscape Design Techniques	3
AGH-220	Plant Identification Suite I	3
AGH-236	Plant Material Maintenance	3
CON-134	Surveying and Site Layout	2
		18
Spring Term I		
AGH-102	Horticulture Math	3
COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	
CSC-110	Introduction to Computers	3
-------	Construction or Design Track course	3
		12
Summer		
AGC-932	Internship	3
		3
Fall Term II		
AGA-154	Fundamentals of Soil Science	3
AGH-240	Plant Identification Suite II	3

COM-744	Oral Communication in the Workplace	3
MGT-300	Introduction to Entrepreneurship	3
-------	Construction or Design Track course	5
		17

Spring Term II

AGH-200	Landscape Estimating and Bidding	2
AGH-253	Insects and Diseases	3
AGH-301	Sustainable Site Management	2
FLS-128	Conversational Spanish	3
MGT-145	Human Relations in Management	
OR		
PSY-111	Introduction to Psychology	3
-------	Construction or Design Track course	2
		15

Total program credit hours **65**

Construction Track courses

AGH-141	Equipment Operations	3
AGH-163	Irrigation Design	2
AGH-165	Irrigation Installation and Repair	2
AGH-300	Hardscape Installation Techniques	3

Design Track courses

AGH-156	Landscape Design II	3
AGH-158	Computer Applications for the Landscape Industry	2
AGH-302	Advanced Landscape Design	3
AGH-460	Design Capstone	2

Liberal Arts - Business Transfer

The Business transfer plan is a Liberal Arts Associate of Arts degree program designed to prepare the student who plans to transfer to a four-year college or university to earn a bachelor's degree in business. Upon transferring, students may choose from accounting, finance, economics, management, MIS (management information systems), marketing and others.

Students must work closely with an advisor when registering each semester. After completion of required courses, students can transfer to such four-year schools as Coe College, Iowa State University, Mount Mercy University, Northwest Missouri State, the University of Iowa and the University of Northern Iowa. With the help of an advisor, a student can chart an academic program that will allow him or her to transfer with full junior class status.

Local Area Network (LAN) Management

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)
Certificate options available. See advisor for information.

Graduates in this program develop, build, integrate and maintain local area networks. Theory and practical hands-on experience give students basic understanding of how computers are networked.

Network administrators design and support server systems and related software, as well as provide end-user support for all LAN-based applications.

Career opportunities: network field technician, network administrator, network engineer, network marketing.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
CSC-110	Introduction to Computers	3
ENG-101	Elements of Writing	3
OR		
ENG-105	Composition I	3
MAT-102	Intermediate Algebra	4
NET-122	Computer Hardware Basics	3
NET-190	Critical Problem Solving	1
NET-212	Cisco Networking	3
		17
Second Semester		
COM-723	Workplace Communications	3
OR		
COM-744	Oral Communication in the Workplace	3
OR		
ENG-105	Composition I	3
OR		
ENG-106	Composition II	3
NET-137	Advanced PC Concepts	3
NET-174	LAN Administration	3
NET-222	Cisco Routers	3
NET-321	Windows Networking	3
NET-338	Directory Concepts	3
		18
Third Semester		
BUS-290	Employment Search and Workplace Success	1
MGT-145	Human Relations in Management	3
NET-184	Wide Area Network (WAN) Basics	2
NET-232	Cisco Switches	3
NET-400	Linux Networking	3

NET-561	Directory Administration	3
		15
Fourth Semester		
NET-192	Network Cabling	3
NET-323	Windows Network Management	3
NET-571	Server Configuration	3
NET-600	Network Security Basics	3
NET-680	TCP/IP for Networking	3
-------	Humanities Elective	3
		18
Total program credit hours		**68**

LAN Management Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
CSC-110	Introduction to Computers	3
NET-122	Computer Hardware Basics	3
NET-212	Cisco Networking	3
		9
Second Semester		
NET-174	LAN Administration	3
NET-321	Windows Networking	3
		6
Third Semester		
NET-400	Linux Networking	3
		3
Total program credit hours		**18**

Network Security Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
NET-174	LAN Administration	3
NET-212	Cisco Networking	3
NET-600	Network Security Basics	3
		9
Second Semester		
NET-618	Network Defense	3
NET-619	Network Attacks	3
NET-630	Cyber Law & Ethics	3
		9
Total program credit hours		**18**

Management

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)

Certificate options are available. See advisor for information.

The Management program provides an extensive selection of management courses. It is designed for someone who would like to develop management skills for career advancement.

This program offers many management and general electives from which to choose to provide students the opportunity to take courses that fit their specific needs. Certificate options are available for students who want to specialize in human resources, project management, entrepreneurship, accounting, sales or Web development for business.

Courses in the program are available online or on KTS (Kirkwood Telecommunication System) at all of Kirkwood's seven-county areas. Students should work with their advisor to develop a solid plan that best meets their education goals.

Career opportunities: front-line to middle-level management, advancement into supervisory capacity, small business owner.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-102	Introduction to Business	3
CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
MGT-130	Principles of Supervision	3
MGT-145	Human Relations in Management	3
		15
Second Semester		
ACC-111	Introduction to Accounting	3
OR		
ACC-152	Financial Accounting	
ENG-108	Composition II: Technical Writing	3
MAT-102	Intermediate Algebra	4
MGT-101	Principles of Management	3
MGT-121	Project Management Basics	3
		16
Third Semester		
MGT-300	Introduction to Entrepreneurship	3
MKT-110	Principles of Marketing	3
-------	Elective	3
-------	Humanities elective	3
-------	Management elective	3
		15
Fourth Semester		
ECN-130	Principles of Microeconomics	3

MGT-301	Progressive Management Trends and Careers	3
-------	Management electives	10
		16

Total program credit hours **62**

Human Resource Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
MGT-101	Principles of Management	3
MGT-145	Human Relations in Management	3
MGT-170	Human Resource Management	3
		9
Second Semester		
MGT-172	Employment Practices	1
MGT-173	Training & Employee Development	1
MGT-182	Labor Relations & Collective Bargaining	1
MGT-193	Wage & Salary Administration	1
-------	Management Elective	3
		7

Total program credit hours **16**

Entrepreneurship Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-146	Small Business Plan Strategies	3
FIN-123	Entrepreneurial Finance	3
MGT-300	Introduction to Entrepreneurship	3
MKT-297	Marketing & Advertising for Entrepreneurs	3
		12

Total program credit hours **12**

Project Management Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
BCA-205	Introduction to Business	3
OR		
CIS-307	Introduction to Databases	3
OR		
CIS-333	Database & SQL	4
CSC-110	Introduction to Computers	3
MGT-121	Project Management Basics	3
		9
Second Semester		
MGT-124	Project Management Tools	3
MGT-130	Principles of Supervision	3
MGT-155	Integrated Project management	3
		9

Total program credit hours **18**

Executive Business Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
ACC-152	Financial Accounting	4
BUS-102	Introduction to Business	3
ECN-120	Principles of Macroeconomics	3
MGT-101	Principles of Management	3
MGT-300	Introduction to Entrepreneurship	3
		16
Second Semester		
ACC-156	Managerial Accounting	4
BUS-185	Business Law I	3
MGT-121	Project Management Basics	3
MGT-130	Principles of Supervision	3
MGT-137	Developing Leadership Skills	1
		14

Total program credit hours **18**

Business Project Management CCSIP Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
ADM-928	Independent Study	2
BUS-102	Introduction to Business	3
CSC-110	Introduction to Computers	3
MGT-121	Project Management Basics	3
MGT-145	Human Relations	3
SPC-112	Public Speaking	3
		17
Second Semester		
BCA-205	Databases & Spreadsheets	3
BUS-192	Business Professionalism: DECA	2
BUS-928	Independent Study	3
ENG-101	Elements of Writing	3
MGT-124	Project Management Tools	3
MKT-150	Principles of Supervision	3
		17
Third Semester		
BUS-932	Internship	1
MGT-155	Integrated Project Management	3
		4

Total program credit hours **38**

Management Online

The Management program provides an extensive selection of introductory, advanced, general and technical management courses. The degree is designed for someone who would like to develop management skills for career advancement.

This program offers many management electives and general electives from which to choose to provide students the opportunity to take courses that fit their specific needs. Certificate options are available for students who want to specialize in human resources, project management or entrepreneurship.

Marketing Management

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters)
Certificate and diploma options available. See advisor for information.

Marketing and management are two of the most popular majors in colleges today, due to the vast employment opportunities available. Marketing Management is a hybrid program offering both marketing and management options. These fields need professionals with strong initiative and a spirit of competition. Successful students also exhibit strong entrepreneurial, problem-solving and interpersonal skills.

Through this program, students have the opportunity to earn one-year diplomas in Apparel Merchandising, Retail Marketing or Sales. Certificates are also available in Retail Marketing and Sales.

Career opportunities: buyer, manufacturer representative, e-commerce, store manager, small business owner, financial services, sales, wholesaler, marketing research, advertising, retailer, sports and entertainment, marketing.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-192	Professionalism: DECA	1
BUS-932	Internship	3
-------	Communication Requirement	3
-------	Marketing Electives	6
-------	Math Elective	3
		16
Second Semester		
BUS-192	Professionalism: DECA	1
CSC-110	Introduction to Computers	3
MGT-145	Human Relations in Management	3
MKT-110	Principles of Marketing	3
-------	Communications Elective	3
-------	Marketing Elective	3
		16
Third Semester		
ACC-111	Introduction to Accounting	3
OR		
ACC-152	Financial Accounting	
BUS-290	Employment Search & Workplace Success	1
MGT-101	Principles of Management	3
MKT-168	Buying & Merchandising Strategies	3
-------	Management or Computer Electives	6
		16
Fourth Semester		
BUS-932	Internship	3
ECN-120	Principles of Macroeconomics	3
OR		
ECN-130	Principles of Microeconomics	
MGT-130	Principles of Supervision	3
MKT-180	Customer Service Strategies	1
MKT-195	Marketing Management	3
-------	Humanities Elective	3
		16
Total program credit hours		**64**

Retail Marketing Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-192	Professionalism: DECA	1
BUS-932	Internship	3
MKT-140	Principles of Selling	3
MKT-160	Principles of Retailing	3
-------	Communication Elective	3
-------	Math Elective	3
		16
Second Semester		
BUS-192	Professionalism: DECA	1
CSC-110	Introduction to Computers	3
MGT-145	Human Relations in Management	3
MKT-110	Principles of Marketing	3
MKT-150	Principles of Advertising	3
-------	Communication Elective	3
		16
Total program credit hours		**32**

Retail Certificate Requirements

Course Number	Course Title	Credit Hours

First Semester		
MKT-140	Principles of Selling	3
MKT-150	Principles of Advertising	3
-------	Communications Elective	3
		9
Second Semester		
BUS-290	Employ Search/Workplace Success	1
BUS-932	Internship	3
MKT-160	Principles of Retailing	3
		7
Total program credit hours		**16**

Sales Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-192	Professionalism: DECA	1
BUS-290	Employment Search/Workplace Success	1
BUS-932	Internship	3
MKT-110	Principles of Marketing	3
MKT-140	Principles of Selling	3
-------	Communications Elective	3
-------	Math Elective	3
		17
Second Semester		
BUS-178	How to Deliver Winning Presentations	1
CSC-110	Introduction to Computers	3
MGT-140	Time Management in the Workplace	1
MGT-145	Human Relations in Management	3
MKT-168	Buying & Merchandising Strategies	3
MKT-180	Customer Services Strategies	1
-------	Communications Elective	3
		15
Total program credit hours		**32**

Sales Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-178	How to Deliver Winning Presentations	1
BUS-290	Employment Search /Workplace Success	1
BUS-932	Internship	3
MGT-140	Time Management in the Workplace	1
MKT-110	Principles of Marketing	3
MKT-140	Principles of Selling	3
MKT-180	Customer Service Strategies	1
-------	Communications Elective	3
		16
Total program credit hours		**16**

Marketing Management CCSIP Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
BUS-102	Introduction to Business	3
BUS-192	Professionalism: DECA	1
CSC-110	Introduction to Computers	3
MGT-121	Project Management Basics	3
MGT-145	Human Relations	3
SPC-112	Public Speaking	3
		16
Second Semester		
ADM-928	Independent Study	2
BUS-192	Professionalism: DECA	1
BUS-928	Independent Study	3
ENG-101	Elements of Writing	3
MGT-300	Introduction to Entrepreneurship	3
MKT-110	Principles of Marketing	3
MKT-140	Principles of Selling	3
		18
Third Semester		
ADM-133	Business Math	3
BUS-932	Internship	1
		4
Total program credit hours		**38**

Masonry Construction

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Diploma
9 months (2 semesters)

Certification

OSHA Safety & Scaffolding

The Masonry Construction curriculum prepares students to enter the trade of bricklaying. Students are given a hands-on intensive introduction to the skills used by bricklayers. Classroom experience takes place between an internship with an instructor of the program and the masonry field experience at the end of the program. Internship is in-house, and Field Experience can be completed with the instructor or non-profit, if employers aren't ready.

Career opportunities: material supply firms, gateway to apprenticeship program, subcontractors, landscape firms,

commercial, residential and industrial contractors and builders.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
MAS-118	Masonry Safety	1
MAS-215	Masonry Tools and Equipment	2
MAS-217	Masonry Lab I	8
MAS-800	Internship	2
MAT-715	Industrial Math I	3
		16
Second Semester (Spring)		
CON-116	Architectural Plans and Specs	2
CON-275	Stone Concepts	2
MAS-218	Masonry Tools and Equipment II	2
MAS-222	Masonry Lab II	9
MAS-920	Field Experience	3
		18
Total program credit hours		**34**

Medical Assisting

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall, Spring or Summer

Award
Diploma
3 semesters (including summer)
Associate of Applied Science degree upon completion of additional courses

In the clinical area, medical assistants (MAs) take patients to the examination room, ask about and record symptoms, and measure the patient's height, weight and blood pressure. MAs also prepare instruments for and assist with minor surgeries, assist the physician with patient exams, obtain EKGs, give injections and draw blood for routine lab work. MAs may also be employed in an administrative position responsible for greeting patients, answering phones, scheduling appointments, and managing medical records, insurance payments and patient accounts.

Career opportunities: physician's family practice or specialty offices, hospitals/clinics, public health clinics, laboratories, phlebotomist, unit secretary, patient service representative.

*Before beginning the technical portion of the Medical Assisting program, HSC-107, HSC-115, and HSC-210 must have been completed in the last three years.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
ADM-105	Introduction to Keyboarding	1
BCA-189	Microcomputer Literacy	1
BIO-161	Basic Anatomy & Physiology	3
HSC-107	Professionals in Health	2
HSC-115	Medical Terminology	4
HSC-210	Health Skills I	1
MAP-123	Administrative Medical Office Procedures	3
		15
Second Semester		
MAP-142	Medical Insurance & Legalities	3
MAP-210	Medical Lab	3.5
MAP-260	Basic Electrocardiology	1
MAP-312	Medical Assisting Clinical Procedures	3
MAP-501	Math for Medications	1
MAP-513	Medical Assisting Pharmacology	3
		14.5
Third Semester		
MAP-618	Medical Assisting Externship	7
PSY-111	Introduction to Psychology	3
SPC-101	Fundamentals of Oral Communication	3
OR		
COM-222	Communication for Health Care Professionals	3
		13
Fourth Semester		
ENG-105	Composition I	3
-------	Electives	9
-------	Humanities Elective	3
-------	Social Science Elective	3
		18
Total Associate of Applied Science degree program credit hours		**60.5**

Medical Laboratory Technology

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall

Award
Associate of Applied Science degree
(granted from Hawkeye Community College)
2 years (5 semesters, including summer)

Kirkwood Community College is an academic affiliate with the Medical Laboratory Technology program at Hawkeye Community College. The Medical Laboratory Technology program prepares students with entry-level skills in clinical laboratory science. Students learn laboratory procedures such as using a number of instruments in the laboratory for

sterilizing, analyzing and testing; keeping the laboratory clean and well-organized; using math to make solutions or to record test results; handling test slides and fragile equipment; using laboratory computer systems in some settings.

Career opportunities: hospital, clinic and physician office labs; blood collection and blood testing facilities; public health laboratories; veterinary offices; industrial laboratories.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
BIO-161	Basic Anatomy and Physiology	3
CHM-110	Introduction to Chemistry	3
MAT-700	Basic Math	3
MLT-101	Introduction to Lab Science	2
PSY-111	Introduction to Psychology *or*	3
SOC-110	Introduction to Sociology	
SPC-101	Fundamentals of Oral Communication	3
		17
Second Semester (Spring)		
BIO-113	General Biology II	4
BIO-186	Microbiology	4
CHM-132	Introduction to Organic & Biochemistry	4
ENG-105	Composition I	3
HSC-117	Basic Medical Terminology	2.5
MLT-120	Urinalysis	3
		20.5
Summer Term - 8 weeks, courses at Hawkeye		
MLT-110	Fundamentals of Lab Techniques	3
MLT-130	Hematology	3
MLT-250	Clinical Microbiology	4
		10
Fourth Semester (Fall) - courses at Hawkeye		
MLT-230	Advanced Hematology	3
MLT-233	Hemostasis & Thrombosis	2
MLT-240	Clinical Chemistry	7
MLT-252	Parasitology	1
MTL-260	Immunohematology	4
MLT-270	Immunology & Serology	2
		19
Fifth Semester - courses at Hawkeye		
(courses extend through spring and summer) 24 weeks of clinics with periodic lecture days. May be scheduled in local area.		
MLT-283	Urinalysis	1
MLT-284	Immunohematology	2
MLT-285	Chemistry	4
MLT-286	Immunology and Serology	1
MLT-287	Hematology	4
MLT-288	Microbiology	4
MLT-291	Lab Survey and Review	1
		17
Total program credit hours		**83.5**

Medical Transcription

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time
Fall

Award
Diploma/Certificate
2 semesters

Increasing requirements for patient care documentation provide numerous opportunities for medical transcriptionists. Physicians and other health care providers use state-of-the-art electronic technology to dictate and transmit highly technical and confidential information for their patients. These medical professionals rely on skilled medical transcriptionists to transform the spoken word into comprehensive records that accurately communicate medical information.

Medical transcriptionists (MTs) are specialists in medical language and health care documentation. They interpret and transcribe dictation by physicians and other health care professionals regarding patient assessment, therapeutic procedures, clinical courses, diagnoses and prognoses.

Career opportunities: physician's offices, laboratories, medical transcription businesses, rehabilitation centers, hospitals, legal offices, insurance companies, medical libraries.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BIO-161	Basic Anatomy & Physiology	3
HIT-360	Introduction to HIT	3
HIT-420	Legal Aspects of Health Information	2
HSC-115	Medical Terminology	4
MTR-102	Professionalism in Medical Transcription	2
MTR-113	Medical Transcription	2.5
		16.5
Second Semester		
HSC-107	Professionals in Health	2
HSC-142	Elements of Pharmacology	1
HSC-217	Introduction to Pathology	3
MAT-731	Introduction to Math	2
MTR-150	Career Medical Transcription	6.5
SPC-101	Fundamentals of Oral Communications	3
OR		
COM-222	Communication for Health Care Professionals	3

	17.5
Total program credit hours	**34**

Medical Transcription Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
HIT-420	Legal Aspects of Health Information	2
HSC-115	Medical Terminology	4
MTR-102	Professionalism in Medical Transcription	2
		8
Second Semester		
MTR-113	Medical Transcription	2.5
MTR-150	Career Medical Transcription	6.5
		9
Total program credit hours		**17**

Nursing - LPN/RN

Nursing
133 Linn Hall
319-398-5563
www.kirkwood.edu/nursing

Entry time
Fall, Spring or Summer
(evening/weekend program begins in fall and spring, and Practical Nurse-only program begins in spring)

Award
Associate of Applied Science degree
2 years (5 semesters) plus prerequisites

Nursing is the largest health care profession in the United States. The Bureau of Labor Statistics indicates that employment among nurses will grow faster than average for all occupations through 2014. Nurses provide direct patient care; observe, assess and record symptoms; give medication and treatments; and serve as health educators for patients, families and the community.

Career opportunities: hospitals, long-term care facilities, home health care, clinics, military, wellness centers.

Additional requirement: All students are required to complete a CNA course and successfully pass the written and skills examination before beginning the Nursing technical and clinical portion of the program. Students may complete HSC-168 Nurse Aide or obtain a CNA through Kirkwood's Continuing Education. Students must be on the state of Iowa's registry. Go to www.kirkwood.edu/ce for more information.

Practical Nursing Degree Requirements

Course Number	Course Title	Credit Hours
Prerequisites (minimum of two semesters)		
BIO-151	Nutrition	3
BIO-168	Human Anatomy and Physiology I with Lab *and*	4
BIO-173	Human Anatomy and Physiology II with Lab *or*	4
BIO-177	Human Anatomy *and*	
BIO-180	Human Physiology	
HSC-157	Professional Roles in Health Care	3
HSC-169	Communication in the Health Care Environment	3
		17
First Semester		
PNN-128	Foundations of Nursing I	5.25
PNN-207	Introduction to Pharmacology	3
PNN-701	Foundations of Nursing Clinic I	1.5
PSY-111	Introduction to Psychology	3
		12.75
Second Semester		
PNN-129	Foundations of Nursing II	3.75
PNN-436	Nursing Care of the Growing Family	3.25
PNN-702	Foundations of Nursing Clinic II	1.5
PSY-121	Developmental Psychology	3
SPC-101	Fundamentals of Oral Communication	3
OR		
SPC-112	Public Speaking	3
		14.5
Third Semester		
PNN-640	Practical Nursing Capstone	2
PNN-810	Practical Nursing Leadership Clinic	1
		3
Total Practical Nursing credit hours		**47.25**

Completing these 47.25 credits above allows students to graduate with a Practical Nursing diploma. Students are now eligible to complete the practical nurse exam. Students who wish to complete the Associate Degree Nursing program need to take the additional classes listed below.

Nursing, Associate Degree Requirements

Course Number	Course Title	Credit Hours
Third Semester		
ADN-149	Transition to Associate Degree Nursing	2
ADN-160	Nursing Care of Specific Populations	2
ADN-730	Nursing Care of Specific Populations Clinic	2
		8
Fourth Semester		
ADN-170	Concepts of Nursing	4

ADN-740	Concepts of Nursing Clinic	3
BIO-186	Microbiology	4
-------	Humanities Elective	3
		14
Fifth Semester		
ADN-180	Advanced Concepts of Nursing	5
ADN-750	Advanced Concepts of Nursing Clinic	3.5
ENG-105	Composition I	3
OR		
ENG-120	College Writing	5
SOC-110	Introduction to Sociology	3
		14.5
Total Associate Degree Nurse credit hours		**80.75**

Occupational Therapy Assistant

Allied Health

221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time

Fall

Award

Associate of Applied Science degree
2 years (5 semesters)

Occupational therapy assistants (OTAs) work with patients of all ages and help them learn skills to lead independent lives. OTAs work under the supervision of an occupational therapist (OT) to provide hands-on services to clients who are learning new ways to succeed in the occupation of life.

Career opportunities: school systems, assisted living facilities, hospitals, outpatient clinics, long-term care facilities, private practice.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
BIO-161	Basic Anatomy & Physiology	3
HSC-107	Professionals in Health	2
OTA-100	Foundations of Occupational Therapy	3
OTA-150	Occupational Therapy Assistant Medical Terminology	1.5
OTA-207	OT Methods I	3
OTA-208	Occupational Development	2.5
PSY-111	Introduction to Psychology	3
		18
Second Semester (Spring)		
ENG-105	Composition I	3
OTA-200	Community Health & Special Populations	5
OTA-211	Pathophysiology for the OTA	4
OTA-212	Functional Kinesiology	3
OTA-306	OT Methods II	3
		18
Third Semester (Summer)		
OTA-308	Physical Dysfunction I	4
OTA-309	Physical Dysfunction II	4
OTA-850	OTA Fieldwork I-A	1
SPC-101	Fundamentals of Oral Communication	3
OR		
COM-222	Communication for Health Care Professionals	3
		12
Fourth Semester (Fall)		
OTA-205	OTA Management	2
OTA-405	Psychosocial Dysfunction	4
OTA-406	OT Methods III	3
OTA-410	Pediatric Interventions for the OTA	2
OTA-411	Geriatric Interventions for the OTA	1.5
OTA-851	OTA Fieldwork I-B	2.5
-------	Humanities Elective	3
		18
Fifth Semester (Spring)		
OTA-409	Professional Development	2
OTA-852	OTA Fieldwork II-A	6
OTA-854	OTA Fieldwork II-B	6
		15
Total program credit hours		**80**

Paramedic

Healthcare Simulation Center

2006 Linn Hall
319-398-1269
www.kirkwood.edu/paramedic
http://www.kirkwood.edu/paramedic

Entry time

Spring

Award

Associate of Applied Science degree
2 years (5 semesters)

Paramedics provide one of the highest levels of pre-hospital emergency care. The paramedic is an allied health professional whose primary focus is to provide advanced emergency medical care for critical and emergent patients who access the emergency medical system. This individual possesses the complex knowledge and skills necessary to provide patient care and transportation.

Paramedics function as part of a comprehensive EMS response, under medical oversight. They perform interventions with the basic and advanced equipment typically found on an ambulance. The paramedic is a link from the scene into the health care system.

Career opportunities: ambulance services, fire departments, hospitals, law enforcement agencies, other health care facilities.

Degree Requirements

Course Number	Course Title	Credit Hours
Prerequisites		
(Must be taken before acceptance into the program)		
BIO-161	Basic Anatomy & Physiology	3
EMS-200	Emergency Medical Technician	8
OR		
EMS-300	Advanced Emergency Medical Technician	8
HSC-117	Basic Medical Terminology	2.5
MAT-731	Introduction to Math	2
		15.5
First Semester		
BIO-181	Homeostatic Physiology	3
EMS-641	Introduction to Paramedicine	3
EMS-642	Pharmacology for Paramedicine	3
PSY-111	Introduction to Psychology	3
SPC-101	Fundamentals of Oral Communication	3
OR		
SPC-112	Public Speaking	3
OR		
COM-222	Communication for Health Care Professionals	3
		15
Second Semester		
EMS-643	Cardiorespiratory Paramedicine	3
EMS-644	Paramedic Clinical I	3
EMS-645	Paramedic I	2.5
ENG-105	Composition I	3
		11.5
Third Semester		
BCA-189	Microcomputer Literacy	1
EMS-646	Paramedic Clinical II	4
EMS-647	Paramedic II	3.5
EMS-648	Special Patient Populations in Emergency Medical Services	4
EMS-649	Trauma & Environmental Emergencies	4
		16.5
Fourth Semester		
EMS-650	Medical and Psychological Emergencies	4
EMS-651	Paramedic Fieldwork	4
EMS-652	Paramedic Clinical III	4
EMS-653	Paramedic III	1
-------	Humanities Elective	3
		16
Total program credit hours		**74.5**

Parks and Natural Resources

Ag Sciences

Horticulture/Floral Careers
319-398-5441
www.kirkwood.edu/agrisciences

Entry time

Summer or Fall

Award

Associate of Applied Science degree
2 years (4 semesters)

If you enjoy the outdoors and have a deep concern for preserving and managing our precious natural resources, take a look at our Parks and Natural Resources program. As a student in this program, you'll learn to maintain and build campgrounds and lake areas; identify and manage fish, amphibians, reptiles, mammals, and nesting and game birds; operate and maintain equipment; manage plant material and land; and maintain park facilities.

Career opportunities: working in a city or county park as a park attendant or naturalist; working in conservation, landscaping or environmental education; working for a county conservation district.

Degree Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGH-102	Horticulture Math	3
AGH-110	Success in Horticulture	1
AGH-123	Woody Plant Materials	3
AGN-105	Applications of Natural Resources	3
AGN-132	Plant Management for Parks	3
COM-744	Oral Communication in the Workplace	3
-------	Humanities Elective	3
		19
Spring Term I		
AGC-313	Leadership in Agriculture	1
AGH-141	Equipment Operations	3
AGH-144	Landscape Construction and Design	3
AGH-279	Botany for Horticulture	2
AGN-250	Park Maintenance Programs	3
COM-723	Workplace Communication	3
OR		
ENG-105	Composition I	3
		15
Summer		
AGC-932	Internship	3
		3
Fall Term II		
AGH-152	Landscape Design Techniques	3
AGN-140	Plants of the Wild	3
AGN-220	Avian Wildlife	3
AGN-223	Aquatic Wildlife	3
AGN-244	Wildlife Management	3
AGN-248	Natural Resources Appreciation	3
		18

Spring Term II		
AGH-238	Soil and Water Conservation	3
AGN-226	Mammalian Wildlife	3
AGN-235	Park and Recreation Administration	3
AGN-240	Natural Resources Interpretation	3
MGT-145	Human Relations in Management	3
OR		
BUS-161	Human Relations	3
		15
Total program credit hours		**70**

Diploma Requirements

Course Number	Course Title	Credit Hours
Fall Term I		
AGH-102	Horticulture Math	3
AGH-123	Woody Plant Materials	3
COM-723	Workplace Communications	3
MGT-145	Human Relations in Management	3
OR		
BUS-161	Human Relations	3
		12
Spring Term I		
AGH-141	Equipment Operations	3
AGH-144	Landscape Construction and Design	3
AGH-238	Soil & Water Conservation	3
AGN-250	Park Maintenance Programs	3
		12
Fall Term II		
AGN-140	Plants of the Wild	3
AGN-220	Avian Wildlife	3
AGN-223	Aquatic Wildlife	3
AGN-226	Mammalian Wildlife	3
AGN-248	Natural Resources Appreciation	3
		15
Total program credit hours		**39**

Pet Grooming/Pet Shop Management

Ag Sciences

Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time

Fall

Award

Diploma
1 years (2 semesters, 1 summer)

As a pet grooming student, you'll learn to groom and maintain the appearance of pets, usually dogs. Grooming includes brushing and cutting the pet's hair, trimming toenails, bathing the pet and cleaning its ears. After successfully completing the one-year program, you'll receive a diploma in Pet Grooming and Pet Shop Management.

Career opportunities: veterinary clinics, pet stores, pet salons, kennels.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
AGV-143	Canine & Feline Nutrition	3
AGV-201	Pet Grooming I	3
AGV-202	Pet Grooming II	3
AGV-400	Grooming Shop Management I	3
BUS-161	Human Relations	3
COM-723	Workplace Communications	3
		18
Second Semester (Spring)		
AGV-203	Pet Grooming III	3
AGV-204	Pet Grooming IV	3
AGV-401	Grooming Shop Management II	3
BUS-149	Small Business Financial Management	3
COM-744	Oral Communication in the Workplace	3
		15
Total program credit hours		**33**

Pharmacy Technician

Healthcare Simulation Center

2006 Linn Hall
319-398-5438
www.kirkwood.edu/pharmtech
http://www.kirkwood.edu/pharmtech

Entry time

Fall or Spring

Award

Diploma
2 semesters

The pharmacy technician, under the supervision of a pharmacist, assists in day-to-day pharmacy operations. Pharmacy technicians work in hospitals or retail pharmacies receiving written prescriptions, taking prescription refill requests, preparing intravenous medications, operating computer and automation systems, applying prescription and auxiliary labels to medication bottles, pricing and controlling inventory and preparing insurance claim forms.

Graduates take a national Pharmacy Technician Certification Exam. National certification is required within one year of initial employment as a pharmacy technician in Iowa.

Career opportunities: retail, hospital, medical clinic pharmacies, and home health agencies.

Degree Requirements

Course Number	Course Title	Credit Hours

First Semester

ADM-105	Introduction to Keyboarding	1
BCA-189	Microcomputer Literacy	1
BIO-161	Basic Anatomy & Physiology	3
HSC-107	Professionals in Health	2
HSC-142	Elements of Pharmacology	1
HSC-210	Health Skills I	1
MAT-102	Intermediate Algebra	4
COM-222	Communication for Health Care Professionals	3
OR		
SPC-101	Fundamentals of Oral Communication	
		16

Second Semester

HSC-115	Medical Terminology	4
PHR-170	Pharmacy Technology	7.5
PSY-111	Introduction to Psychology	3
		14.5

Total program credit hours **30.5**

Physical Therapist Assistant

Allied Health

221 Linn Hall
319-398-5566
www.kirkwood.edu.alliedhealth

Entry time

Fall

Award

Associate of Applied Science degree
2 years (5 semesters, including summer)

Physical therapist assistants (PTAs) work closely with physical therapists (PTs) to provide services to people with physical disabilities. Patient treatments may include exercise, functional activities, gait training, massage, electrical stimulation, hot/cold packs, traction and ultrasound and other therapeutic interventions.

The PT performs an initial patient examination and identifies patient problems and goals, then outlines a plan of care. The PTA assists the PT by carrying out all or part of the plan of care, monitoring the patient's progress and documenting the care.

Career opportunities: hospitals, nursing homes, rehabilitation centers, outpatient clinics.

Degree Requirements

Course Number	Course Title	Credit Hours

Preparatory Classes

If students do not have the required high school or college coursework, they need to take the following preparatory courses before admission.

BIO-110	Basic Biological Concepts	3
MAT-107	Survey of Math	4
PHY-120	Introductory Physics	3

Fall Semester

BIO-168	Human Anatomy & Physiology I with Lab	4
HSC-107	Professionals in Health	2
HSC-210	Health Skills I	1
PTA-101	Introduction to PTA	2
PTA-120	Kinesiology	3
PTA-140	Functional Motor Development	3
PTA-192	PTA Modalities I	2
		17

Spring Semester

BIO-173	Human Anatomy and Physiology with Lab II	4
PTA-110	Fundamentals for PTA	3
PTA-150	Pathophysiology	3
PTA-193	PTA Modalities II	3
SPC-101	Fundamentals of Oral Communication	3
OR		
COM-222	Communication for Health Care Professionals	3
		16

Summer Term

ENG-105	Composition I	3
PTA-160	PTA Procedures I	3
PTA-161	PTA Procedures II	3
PTA-301	PTA Clinic I	2
		11

Fall Semester

PSY-111	Introduction to Psychology	3
PTA-210	Orthopedics	3
PTA-230	Rehab for Medical Conditions	3
PTA-240	Neurology	3
PTA-302	PTA Clinic II	2
-------	Humanities Elective	3
		17

Spring Semester

PTA-250	PTA Career Essentials	2
PTA-431	PTA Clinic III	12
		14

Total program credit hours **75**

Plumbing Technology

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall

Award

Diploma

1 year (2 semesters)

The Plumbing Technology program provides entry-level skills and knowledge for students preparing to enter the plumbing industry. Classes in the first semester focus on safety, hand and power tools, materials, pipe joining methods, code book layout, plan and print reading and trade calculations. Hands-on classes concentrate on pipe joining, pipe materials and basic pipe fitting practices.

The second semester covers plumbing code requirements, installation requirements for drain, waste and vent systems, water pipe systems, gas pipe systems, gas venting systems, cross connection and backflow prevention. The hands-on class includes design and construction of a three-fixture washroom group and testing and troubleshooting backflow prevention devices.

Career opportunities: plumbing installation technician, plumbing maintenance technician, plumbing service technician, plumbing apprenticeship program.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
MAT-716	Industrial Math II	3
PLU-130	Plumbing Theory I	6
PLU-140	Plumbing Practices I	4
PLU-148	Plan & Print Reading for Plumbing	2
PLU-932	Internship	2
		17
Second Semester (Spring)		
MAT-738	Plumbing Math Concepts	1
PLU-132	Plumbing Theory II	8
PLU-142	Plumbing Practices II	4
PLU-150	Advanced Plan & Print Reading	2
COM-723	Workplace Communications	3
OR		2
COM-744	Oral Communication in the Workplace	3
		18
Total program credit hours		**35**

Respiratory Therapist

Allied Health

221 Linn Hall
319-398-5566
www.kirkwood.edu/alliedhealth

Entry time

Fall

Award

Associate of Applied Science degree
2 years (5 semesters)

Respiratory therapists, also known as respiratory care practitioners, provide treatment, evaluation, monitoring and management of patients with breathing disorders or cardiovascular problems. Respiratory therapists administer oxygen, perform cardiopulmonary resuscitation, manage mechanical ventilators, administer medications, monitor cardiopulmonary systems and measure lung function. Respiratory therapists treat all types of patients: premature infants whose lungs are not fully developed, elderly patients with chronic asthma or emphysema, as well as emergency care for heart attack, stroke, drowning or shock.

Career opportunities: hospitals, sales and training, hospital outreach programs, pharmaceutical sales, sleep lab, outpatient clinics, home health agencies.

Degree Requirements

Course Number	Course Title	Credit Hours
Prerequisites		
BIO-161	Basic Anatomy & Physiology	3
BIO-186	Microbiology	4
CHM-110	Introduction to Chemistry	3
		10
First Semester (Fall)		
ENG-105	Composition I	3
HSC-107	Professionals in Health	2
HSC-115	Medical Terminology	4
HSC-210	Health Skills I	1
MAT-102	Intermediate Algebra	4
RCP-120	Cardiopulmonary Assessment	1
RCP-210	Introduction to Respiratory Care	2.5
		17.5
Second Semester (Spring)		
PSY-111	Introduction to Psychology	3
RCP-220	Respiratory Care I	3
RCP-300	Respiratory Physiology	4
RCP-730	Respiratory Care Clinic I	2.5
SPC-101	Fundamentals of Oral Communication	3
		15.5
Third Semester (Summer)		
RCP-370	Respiratory Pathology I	2
RCP-420	Pulmonary Function Testing	2
RCP-510	Respiratory Care II	6
		10
Fourth Semester (Fall)		
RCP-380	Respiratory Pathology II	2.5
RCP-470	Cardiac Monitoring	1.5
RCP-610	Perinatology	2.5
RCP-735	Respiratory Care Clinic II	6.5
RCP-850	Respiratory Care III	2.5
		15.5
Fifth Semester (Spring)		
RCP-480	Advanced Cardiac Care	2.5
RCP-740	Respiratory Care Clinic III	6.5
RCP-890	Respiratory Care Applications	2
------	Humanities Elective	3
		14

Total program credit hours	**82.5**

Restaurant Management

Hospitality Arts
The Hotel at Kirkwood Center
319-848-8770
www.kirkwood.edu/hospitality

Entry time
Fall or Spring

Award
Associate of Applied Science degree
2 years (4 semesters)

Students in Kirkwood's hospitality programs prepare for their careers through practical experience in management, food preparation and service at The Hotel at Kirkwood Center. International education opportunities are also available.

In addition to management and food service techniques, instruction covers related technical subjects including nutrition, purchasing, sanitation, computers, human relations and legal aspects of the hospitality industry. This major prepares students for entry-level management positions.

Students assist in the daily operation of The Class Act, a full-service restaurant at The Hotel at Kirkwood Center. The restaurant features fine dining for hotel and conference center guests, Kirkwood staff and the public. Students take a leadership role in planning, preparing for and servicing catered events on campus during their last semester. Students are required to purchase uniforms when in kitchen and dining areas.

Career opportunities: restaurants, casinos, hospitals, cruise ships, catering, country clubs, hotels & resorts, colleges, long-term care facilities, corporate dining centers.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
COM-723	Workplace Communications	3
OR		
ENG-105	Composition I	3
CSC-110	Introduction to Computers	3
HCM-100	Sanitation & Safety	2
HCM-109	Kitchen Essentials	1.5
HCM-138	Food Fundamentals	3
HCM-147	Culinary Techniques	1.5
HCM-260	Hospitality Math	3
OR		
MAT-140	Finite Math	3
HCM-324	College Orientation - Hospitality	1
		18
Second Semester		
HCM-204	Service Techniques	3
HCM-227	Menu Planning	1
HCM-231	Nutrition	2
HCM-279	Hospitality Accounting	3
OR		
ACC-152	Financial Accounting	4
HCM-315	Wine, Beer & Spirits Basics	3.5
HCM-321	Introduction to Hospitality Industry	1
HCM-330	Hospitality Personnel Management	3
		16.5
Third Semester		
BUS-102	Introduction to Business	3
OR		
MGT-300	Introduction to Entrepreneurship	3
HCM-213	Service Management	4
HCM-310	Hospitality Law	3
MKT-110	Principles of Marketing	3
OR		
MKT-150	Principles of Advertising	3
MKT-180	Customer Service Strategies	1
		14
Fourth Semester		
COM-744	Oral Communication/Workplace	3
OR		
ENG-106	Composition II	3
FLS-118	Spanish for Professionals: Hospitality	3
HCM-251	Purchasing, Receiving and Inventory	2
HCM-340	Hospitality Events and Catering (FOH)	3
MGT-145	Human Relations in Management	3
OR		
PSY-111	Introduction to Psychology	
		14
Total program credit hours		**62.5**

Skilled Trades

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree

The Skilled Trades degree allows students who complete USDOL-BAT-approved* apprenticeship training programs to convert the apprenticeship training into college credits. This program is designed for those who do not have college degrees and are interested in pursuing further opportunities in supervisory and management positions.

Students who complete four- or five-year BAT-approved programs can automatically articulate their training course work. For four- and five-year apprenticeship programs, students can receive 30 credit hours toward the 64-credit-hour

degree. If students have completed the OJT (On-the-Job Training) associated with the apprenticeship training, then another 16 credit hours of internship can be waived. This leaves only 18 credit hours of general education core courses needed to earn an associate of applied science degree.

Career opportunities: advancement opportunities in supervisory and management-level positions.

(*U.S. Department of Labor Bureau of Apprenticeship & Training)

Degree Requirements

Course Number	Course Title	Credit Hours
CSC-110	Introduction to Computers	3
ENG-101	Elements of Writing	3
ENG-105	Composition I	3
HUM-116	Encounters in Humanities	3
MAT-115	Mathematics & Society	3
PSY-111	Introduction to Psychology	3
Total program credit hours		**18**

Surgical Technology

Allied Health
221 Linn Hall
319-398-5566
www.kirkwood.edu.alliedhealth

Entry time
Spring start (Cedar Rapids site)
Fall start (Distance Education program available at Hawkeye Community College, Indian Hills Community College, Northeast Iowa Community College)

Award
Diploma
1 year (3 semesters, including summer)
Associate of Applied Science degree after completion of additional required courses.
2 years (5 semesters, including summer)

Surgical technologists are allied health professionals who are an integral part of the team of medical practitioners providing surgical care to patients in a variety of settings. They work under the supervision of a surgeon to ensure that the operating room or environment is safe, that equipment functions properly, and that the operative procedure is conducted under conditions that maximize safety.

Career opportunities: hospital operating rooms, sales representative, ambulatory surgery centers, teaching, hospital labor and delivery, hospital central supply, advancement to management positions possible with experience and education.

AAS Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BIO-161	Basic Anatomy & Physiology	3
BIO-182	Basic Microbiology	1.5
HSC-107	Professionals in Health	2
HSC-117	Basic Medical Terminology	2.5
HSC-210	Health Skills I	1
SUR-126	Surgical Technology I	6.5
		16.5
Second Semester		
MAT-731	Introduction to Math	2
SUR-225	Surgical Technology II	4
SUR-421	Surgical Technology Pharmacology	1
SUR-440	Biomedical Sciences for Surgical Technology	2
SPC-101	Fundamentals of Oral Communication	3
OR		
COM-222	Communication for Health Care Professionals	3
		12
Third Semester		
SUR-340	Surgical Specialties	4
SUR-520	Surgical Technology Practicum I	2
SUR-523	Surgical Technology Practicum II	9
		15
Fourth Semester		
BIO-181	Homeostatic Physiology	3
ENG-105	Composition I	3
PSY-111	Introduction to Psychology	3
-------	Humanities Elective	3
		12
Fifth Semester		
MGT-101	Principles of Management	3
-------	Electives	5
		8
Total Associate of Applied Science degree program credit hours		**63.5**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
BIO-161	Basic Anatomy & Physiology	3
BIO-182	Basic Microbiology	1.5
HSC-107	Professionals in Health	2
HSC-117	Basic Medical Terminology	2.5
HSC-210	Health Skills I	1
SUR-126	Surgical Technology I	6.5
		16.5
Second Semester		
MAT-731	Introduction to Math	2
SUR-225	Surgical Technology II	4
SUR-421	Surgical Technology Pharmacology	1

SUR-440	Biomedical Sciences for Surgical Technology	2
SPC-101	Fundamentals of Oral Communication	3
OR		
COM-222	Communication for Health Care Professionals	3
		12
Third Semester		
SUR-340	Surgical Specialties	4
SUR-520	Surgical Technology Practicum I	2
SUR-523	Surgical Technology Practicum II	9
		15
Total diploma program credit hours		**43.5**

Telecommunication Technology

Industrial Technologies
101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time
Fall

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)

The Telecommunication Technology program gives students the education and skills necessary to succeed in the high-tech world of telecommunication. During the first year, students receive a fundamental introduction to the basics of electrical circuits and system design and maintenance. During the second year, students concentrate on fiber optics, telephony and other subjects critical to the understanding of telecommunication systems.

Students complete a paid internship at a telecommunications firm between their first and second years, which allows them to experience the job market firsthand. One of the highlights of this program is the state-of-the-art telecommunication lab located on campus. Students can transfer credits from this program to the University of Northern Iowa and work toward a Bachelor of Arts in technology management.

Career opportunities: fiber optics installation and repair, field technician, voice and data network management, service center technician, sales and service, field installer.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ELT-402	Introduction to Communication Systems	3
ELT-427	Telephony Circuits I	3
MAT-102	Intermediate Algebra	4
NET-154	Networking Basics	3
-------	Communications Elective	3
		16
Second Semester (Spring)		
ELT-304	Introduction to Electrical Circuits	4
ELT-395	Advanced Electrical Circuits	5
ELT-500	LAN Design & Protocols	3
ELT-506	Router Basics	3
		15
Summer Term		
ELT-880	Telecommunications Internship	3
		3
Third Semester (Fall)		
CSC-110	Introduction to Computers	3
ELT-408	Structured Cabling System	3
ELT-428	Telephony Circuits II	3
ELT-460	Fiber Optics	3
-------	Humanities Elective	3
		15
Fourth Semester (Spring)		
ELT-400	Local Loop	3
ELT-443	Multiplexing	3
ELT-455	Transmission Circuits I	3
-------	Social Science Elective	3
-------	Communications Elective	3
		15
Total program credit hours		**64**

Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
ELT-402	Introduction to Communication Systems	3
ELT-427	Telephony Circuits I	3
MAT-102	Intermediate Algebra	4
NET-154	Networking Basics	3
-------	Communications Elective	3
		16
Second Semester (Spring)		
ELT-304	Introduction to Electrical Circuits	4
ELT-395	Advanced Electrical Circuits	5
ELT-500	LAN Design & Protocols	3
ELT-506	Router Basics	3
		15
Summer Term		
ELT-880	Telecommunications Internship	3
		3
Total program credit hours		**34**

Veterinary Assistant

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Fall

Award
Diploma
1 year (2 semesters, 1 summer)

As a Veterinary Assistant student, you'll prepare for a career working with animals in a variety of settings such as veterinary clinics, boarding kennels and grooming salons. You'll study animal diseases and disease prevention, small animal pharmacology, pet grooming, kennel management, animal behavior, nutrition, legal principles, human relations, communication and computer science.

Career opportunities: veterinary assistants, veterinary receptionists, animal control officers, animal health product sales, retail pet supply sales.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
AGC-314	Leadership in Agriculture	2
AGV-105	Animal Behavior/Kennel Management	5
AGV-152	Veterinary Computer Applications	2
AGV-153	Veterinary Reception and Administration Skills	3
AGV-158	Veterinary Law and Ethics	3
MGT-145	Human Relations in Management	3
		18
Second Semester (Spring)		
AGC-115	Ag Career Orientation	1
AGC-314	Leadership in Agriculture	2
AGV-101	Veterinary Assisting	3
AGV-107	Pharmacy Skills	3
AGV-120	Veterinary Medical Terminology	1
AGV-143	Canine and Feline Nutrition	3
AGV-201	Pet Grooming I	3
AGV-300	Clinical Veterinary Experience	2
COM-723	Workplace Communications	3
		21
Summer Term		
AGC-932	Internship (coordinator approval)	6
		6
Total program credit hours		**45**

Veterinary Technician

Ag Sciences
Washington Hall
319-398-5609
www.kirkwood.edu/agrisciences

Entry time
Summer

Award
Associate of Applied Science degree
2 years (4 semesters, 2 summers)

This program is accredited by the AVMA (American Veterinary Medical Association) Committee on Veterinary Technician Education and Activities (CVTEA). For more information, go to www.avma.org.

Veterinary technicians provide professional technical support to veterinarians, biomedical researchers and other scientists. They also care for hospitalized patients; assist the doctor in surgery; perform physical exams, lab work and technical procedures (blood draws, IV placement); take health histories and X-rays; give and monitor anesthesia; provide client education; and perform reception duties.

At Kirkwood, veterinary technician students work with a variety of animals including dogs, cats, horses, cows, pigs, birds, snakes, guinea pigs, hamsters and rats. A strong background in biological sciences is needed for this program.

Career opportunities: small, mixed or large animal practices; humane societies; animal shelters; zoos; specialty veterinary practices; pet shops; biological research labs; animal control agencies; veterinary teaching hospitals; state and federal agencies.

Degree Requirements

Course Number	Course Title	Credit Hours
Summer Term		
AGC-115	Ag Career Orientation	1
AGV-120	Veterinary Medical Terminology	1
AGV-126	Animal Anatomy & Physiology I	3
AGV-152	Veterinary Computer Applications	2
ENG-105	Composition I	3
		10
Fall Term I		
AGC-313	Leadership in Agriculture	1
AGV-105	Animal Behavior/Kennel Management	5
		1
AGV-127	Animal Anatomy & Physiology II	4
AGV-142	Math for Vet Tech	3
CHM-110	Introduction to Chemistry	3
CHM-111	Introduction to Chemistry Lab	1
		17
Spring Term I		
AGV-140	Veterinary Pharmacology	3
AGV-146	Large Animal Care	3
AGV-161	Animal Nursing I	3
AGV-167	Veterinary Clinic Pathology I	3
ENG-106	Composition II	3
OR		
SPC-101	Fundamentals of Oral Communication	

MGT-145	Human Relations in Management	3
		18
Summer Term		
AGC-932	Internship	4
		4
Fall Term II		
AGC-210	Employment Seminar	1
AGV-144	Fundamentals of Small Animal Nutrition	3
AGV-162	Animal Nursing II	3
AGV-168	Veterinary Clinic Pathology II	3
AGV-175	Small Animal and Cage Bird Medicine	4
BIO-186	Microbiology	4
		18
Spring Term II		
AGV-163	Animal Nursing III	3
AGV-169	Veterinary Clinic Pathology III	3
AGV-171	Large Animal and Poultry Medicine	4
AGV-179	Lab Animal Medicine	1
-------	Humanities Elective	3
		14
Total program credit hours		**81**

Water Environmental Technology

Industrial Technologies
319-398-5678
www.kirkwood.edu/industrialtech

Entry time
Fall, Spring or Summer

Award
Associate of Applied Science degree
2 years (4 semesters, 1 summer)
Diploma
1 year (2 semesters, 1 summer)

This innovative program provides students with real-world experience with either a one-year or two-year program for preparation in the water and wastewater fields. The two-year degree includes technical study in water/wastewater procedures, complemented by math, science, social science, humanities classes and an internship. The Water Environmental Technology program comes to you via Environmental Technology Online (www.et-online.org). The classes were developed by the Hazardous Materials Training and Research Institute. Students may transfer credits from this program to the University of Northern Iowa toward a bachelor's degree in technology management.

Career opportunities: municipal water utilities, municipal wastewater treatment plants, rural water systems, industrial waste treatment facilities, engineering firms, privately owned water/wastewater plants.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CHM-110	Introduction to Chemistry	3
WAT-306	Wastewater Collection Systems	4
WAT-307	Wastewater Treatment I	4
WAT-308	Wastewater Analysis	3
-------	Communications Elective	3
		17
Second Semester (Spring)		
MAT-102	Intermediate Algebra	4
WAT-300	Water Analysis	3
WAT-304	Water Treatment I	4
WAT-305	Water Distribution Systems	4
		15
Summer Term		
WAT-932	Internship	3
		3
Third Semester (Fall)		
CSC-110	Introduction to Computers	3
MGT-130	Principles of Supervision	3
WAT-301	Basic Mechanical Maintenance & Pumps	3
WAT-312	Water Treatment II	4
WAT-400	Permits & Administration	1
-------	Communications Elective	3
		17
Fourth Semester (Spring)		
WAT-210	Wastewater Treatment: Industrial	4
WAT-311	Wastewater Treatment II	4
-------	Humanities or History/Cultures Elective	3
-------	Science Elective	3
-------	Social Science Elective	3
		17
Total program credit hours		**69**

Water Environmental Tech. Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
WAT-300	Water Analysis	3
WAT-304	Water Treatment I	4
WAT-305	Water Distribution Systems	4
MAT-102	Intermediate Algebra	4
		15
Second Semester		
CHM-110	Introduction to Chemistry	3
WAT-306	Wastewater Collection Systems	4
WAT-307	Wastewater Treatment I	4
WAT-308	Wastewater Analysis	3
-------	Communications Elective	3
		17

Third Semester		
WAT-932	Internship	3
		3
Total diploma program credit hours		**35**

Water Treatment Specialist Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
WAT-300	Water Analysis	3
WAT-304	Water Treatment I	4
WAT-305	Water Distribution Systems	4
MAT-102	Intermediate Algebra	4
		15
Second Semester		
ENV-115	Environmental Science	3
WAT-301	Basic mechanical Maintenance & Pumps	3
WAT-312	Water Treatment II	4
WAT-400	Permits & Administration	1
-------	Communications Elective	3
		14
Third Semester		
MGT-130	Principles of Supervision	3
WAT-932	Internship	3
		6
Total diploma program credit hours		**35**

Wastewater Specialist Diploma Requirements

Course Number	Course Title	Credit Hours
First Semester		
WAT-301	Basic Mechanical Maintenance & Pumps	3
WAT-306	Wastewater Collection Systems	4
WAT-307	Wastewater Treatment I	4
-------	Communications Elective	3
		14
Second Semester		
ENV-115	Environmental Science	3
WAT-210	Wastewater Treatment: Industrial	4
WAT-308	Wastewater Analysis	3
WAT-311	Wastewater Treatment II	4
		14
Third Semester		
MAT-102	Intermediate Algebra	4
WAT-932	Internship	3
		7
Total diploma program credit hours		**35**

Web Technologies

Business & Information Technology

203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time

Fall, Spring or Summer

Award

Associate of Applied Science degree
2 years (4 semesters)
Certificate option available. See advisor for information.

Web Technologies provides students with the opportunity to pursue an associate degree built on a strong base of Web-related course work, tailored to the student's individual interest with one of three elective emphasis areas. There is also a shorter certificate option for those not interested in a degree at this time.

The Web Technologies degree appeals to students with a range of interests connected with the World Wide Web. Students begin with a set of basic courses covering HTML and CSS, Web media, and introductory computer and programming skills. As the program progresses, students learn various aspects of Web design and development through courses emphasizing the workflow associated with the planning process, site design and the use of standard technologies, such as content management systems, to provide client solutions. Students also consider the business side of the Web development through courses in marketing and e-commerce, learning about current topics such as Web analytics and search engine optimization along with payments, catalogs and shopping carts. To round out each student's technical knowledge, the use of scripting, PHP and databases is also included.

Web Development emphasis options:

For students wishing to go further with programming, two elective concentrations are offered. The first emphasizes the Java programming language and culminates in a course in creating dynamic interactions with Java Server Pages. The second, based on Microsoft technology, emphasizes the Visual Basic language and culminates in the use of ASP.NET for providing dynamic pages and Web services. Both options include a course in client-side scripting.

Web Graphic Design emphasis option:

For students wishing to focus on design, there is an elective concentration in Web graphic design, which includes an additional course in digital layout, alongside courses covering several professional graphics tools, including Adobe Photoshop, Illustrator and Flash.

Web Design & Development certificate:

The Web Design & Development certificate is an abbreviated course sequence for those looking to add basic Web skills to careers in marketing, graphic design, computer support or management. Student study many of the core courses from the Web Technologies degree program, but

without the emphasis areas, advanced courses or general education components of a degree program.

Career opportunities: digital developer, Web editor, eBusiness Web designer, Web graphics designer, information technology designer, Web marketing specialist, interactive marketer, website content manager, multimedia/Web specialist, Web software developer, Web application developer, Web systems manager.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester		
BCA-302	Graphics & Multimedia for the Web	3
CIS-121	Introduction to Programming Logic	3
CIS-207	Fundamentals of Web Programming	3
CSC-110	Introduction to Computers	3
MAT-102	Intermediate Algebra	4
		16
Second Semester		
BCA-290	Web Design Principles	3
CIS-307	Introduction to Databases	3
OR		
CIS-332	Database & SQL	3
ENG-105	Composition I	3
MKT-110	Principles of Marketing	3
-------	Emphasis area course	3
		15
Third Semester		
BCA-320	Applied Web Technologies	3
BUS-151	Introduction to E-Commerce	3
CIS-334	PHP/Apache/MySQL	3
-------	Emphasis area course	3
-------	Humanities Elective	3
		15
Fourth Semester		
BCA-800	Web Technologies Capstone	3
BUS-290	Employment Search & Workplace Success	1
CIS-280	Client Side Scripting	3
ENG-106	Composition II	3
OR		
SPC-101	Fundamentals of Oral Communication	3
MGT-145	Human Relations in Management	3
-------	Emphasis area courses	3
		16
Total program credit hours		**62**

Web Technologies - Graphic Design Emphasis Area Courses

(Take 3 of these 4)

GRA-127	Illustrator I	3
GRA-131	Digital Layout	3
GRA-140	Digital Imaging	3
GRA-195	Introduction to Web Media	3

Web Technologies - Open Source Programming Emphasis Area Courses

CIS-172	Java	4
CIS-176	Java II	4
CIS-181	Java III	3

Web Technologies - Microsoft Programming Emphasis Area Courses

CIS-622	.NET Programming I	3
CIS-624	.NET Programming II	3
CIS-626	.NET Programming III	3

Web Design & Development Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester		
CIS-121	Introduction to Programming Logic	3
CIS-207	Fundamentals of Web Programming	3
CIS-307	Introduction to Databases	3
OR		
CIS-332	Databases & SQL	3
		9
Second Semester		
BCA-290	Web Design Principles	3
CIS-334	PHP/ApacheMySQL	3
		6
Total program credit hours		**15**

Welding

Industrial Technologies

101 Jones Hall
319-398-4983
www.kirkwood.edu/industrialtech

Entry time

Fall or Spring
(daytime and evening classes available)

Award

Associate of Applied Science degree
2 years (4 semesters)
Certificates
1 semester (each)

Certification

Welder qualification to American Welding Society codes is available in several welding processes.

Students in the welding program can choose a certificate or an Associate of Applied Science degree. The associate degree program includes Shielded Metal Arc Welding, Gas Metal Arc Welding and Gas Tungsten Arc Welding. Graduates of this program can transfer to the University of North-

ern Iowa to pursue a Technology Management Bachelor of Arts degree.

Career opportunities: trade unions such as Ironworkers, Plumbers and Pipefitters, and Boilermakers; production welder; welding fabrication; weld shop owner; maintenance welder; welding inspection; welding instructor; welding equipment sales.

Degree Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
MAT-764	Welding Math I	2
WEL-105	Welding Principles	2
WEL-110	Welding Blueprint Reading	2
WEL-156	Welding Skills I	4
WEL-157	Welding Skills II	4
-------	Communications Elective	3
		17
Second Semester (Spring)		
MAT-765	Welding Math II	3
WEL-128	Brazing/Soldering	2
WEL-130	Oxyacetylene Welding	2
WEL-184	Gas Metal Arc Welding	3
WEL-208	Introduction to Fabrication	2
-------	Communications Elective	3
		15
Third Semester (Fall)		
CSC-110	Introduction to Computers	3
OR		
IND-155	Microcomputer Applications	3
WEL-113	Welding Blueprint Reading/Pipe	1
WEL-185	Advanced Gas Metal Arc Welding	3
WEL-192	Gas Tungsten Arc Welding	4
WEL-302	Pipe Welding/SMAW	2
		13
Fourth Semester (Spring)		
-------	Humanities Elective	3
-------	Social Science Elective	3
-------	Welding Electives	12
		18
Total program credit hours		**63**

Combination Welding Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
WEL-130	Oxyacetylene Welding	2
WEL-184	GMAW	3
WEL-208	Introduction to Fabrication	2
		7
Second Semester (Spring)		
MAT-765	Welding Math II	3
WEL-128	Brazing/Soldering	2
WEL-192	Gas Tungsten Arc Welding	4
		9
Total program credit hours		**16**

Pipe Welding Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
MAT-739	Pipe Fitters Math	3
WEL-302	Pipe Welding/SMAW	2
WEL-304	Pipe Welding/SMAW Fixed Horizontal	3
WEL-305	Pipe Welding/SMAW Qualification	3
		11
Second Semester (Spring)		
WEL-113	Welding Blueprint Reading/Pipe	1
WEL-306	Pipe Welding/Heavy Wall GTAW	3
WEL-307	Pipe Welding/GTAW	3
WEL-311	Pipe Welding/Heavy Wall GTAW	5
		12
Total program credit hours		**23**

Shielded Metal Arc Welding Certificate Requirements

Course Number	Course Title	Credit Hours
First Semester (Fall)		
WEL-156	Welding Skills I	4
WEL-157	Welding Skills II	4
		8
Second Semester (Spring)		
MAT-764	Welding Math I	2
WEL-110	Welding Blueprint Reading	2
WEL-146	AWS Bend Test	4
		8
Total program credit hours		**16**

Career Transfer Programs

Business Administration

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

Entry time
Fall, Spring or Summer

Award
Associate of Science/Career Option degree
2 years (4 semesters)

The Business Administration program prepares students for careers in many diverse areas of business, and is based on a strong foundation of business and general education courses. Students may choose from numerous elective courses to prepare for careers in accounting, financial services and management.

Upon completion of the program, students may choose to enter the workforce or transfer to four-year colleges or universities.

Many courses in the program are available online or on KTS (Kirkwood Telecommunication System) at Kirkwood's seven-county areas. Students should work with their advisor to develop a plan that best meets their educational goals.

Required Courses

Course Number	Course Title	Credit Hours
First Semester (Fall)		
CSC-110	Introduction to Computers	3
ENG-105	Composition I	3
MGT-101	Principles of Management	3
MAT-140	Finite Math	3
-------	Humanities or History/Cultures Core	3
		15
Second Semester (Spring)		
ENG-106	Composition II	3
ECN-130	Principles of Microeconomics	3
-------	Math or Science Core	3
-------	Business Electives	6
		15
Third Semester (Fall)		
ACC-152	Financial Accounting	4
ECN-120	Principles of Macroeconomics	3
SPC-101	Fundamentals of Oral Communication	3
-------	Business Electives	6
		16
Fourth Semester (Spring)		
ACC-156	Managerial Accounting	4
BUS-294	Business Administration Capstone	1
-------	Business Electives	9
-------	Humanities or History/Cultures Core	3
		17
Total program credit hours		**63**

Business Administration Online

Business & Information Technology
203 Nielsen Hall
319-398-5416
www.kirkwood.edu/businessdept

The Business Administration program prepares students for careers in diverse areas of business, and is based on a strong foundation of business and general education courses. Choose from numerous elective courses to prepare for careers in accounting, banking/finance or management.

Upon completion of the program, students may choose to enter the workforce or transfer to four-year colleges or universities.

Courses in the program are available online or on KTS (Kirkwood Telecommunication System) at all of Kirkwood's seven-county areas. Students should work with their advisor to develop a solid plan that best meets their educational goals.

Admissions, Tuition & Financial Aid

Admissions Services

Iowa Hall
319-398-5517 or 800-363-2220
info@kirkwood.edu

Kirkwood is proud to maintain an open admission policy, which means enrollment is open to all people with or without a high school diploma.

Applying for Admission

1. Ways to Apply

The fastest way to apply is at www.kirkwood.edu/apply.

Applications may also be faxed to 319-398-4928 or mailed to:

One Stop Office
202 Kirkwood Hall
Kirkwood Community College
P.O. Box 2068
Cedar Rapids, IA 52406-2068

There is no application fee. Select one program area to receive more information about completing the admission process.

Some programs require a program conference. At the program conference, students meet with the program instructors to learn more about the expectations of the program. This is an important step because some programs fill quickly. Program advisors contact students with more information once applications are received.

2. Placement Exams

All new students registering for more than six credit hours are required to take the COMPASS test prior to registration, unless they meet one of the following exemptions: (Allow at least two weeks for these exemptions to be evaluated.)

- Earned a Bachelor's degree from an accredited college.
- Successfully completed (C or better) college-level math and writing classes at a regionally accredited college.
- Completed the COMPASS test or ACT and sent the official record of scores to Kirkwood. Math scores are considered valid for two years while reading and writing scores are valid for three years.

Call the Test Center at 319-398-5456 for more information and to find a location closest to you.

3. Financial Aid

Submit the Free Application for Federal Student Aid (FAFSA) as soon as possible after January 1. Start early – the financial aid process can take three to five months. Go to www.fafsa.gov.

4. Scholarships

Most Kirkwood scholarship applications are accepted from October 1 through March 31. More than $2 million in scholarship awards is available to all Kirkwood students. Apply at www.kirkwood.edu/scholarships.

5. Housing

Contact the Housing office at 319-398-7647 or www.kirkwood.edu/housing. You can tour available housing during our TGIF (To Get Information Fast) campus visits.

6. Transcripts

Transfer or returning adult students who want credit for previous course work must provide the One Stop office with an official transcript from each college or university attended.

Admission to the college does not guarantee acceptance into all programs.

Generally, admission to programs is granted on a continuous basis as applicants complete the required admission procedures. Applicants should apply as soon as they have decided to seek admission. Students can submit applications one year prior to program start dates. (Check the entry time in the program descriptions in this catalog.)

Applications are accepted up to the day of registration in many college programs. However, students should complete their applications well in advance of the semester they plan to enter to gain the maximum pre-enrollment assistance from college staff. Those with college degrees can send their transcripts to the One Stop office to be used for advising purposes.

College Credit While in High School

College-ready high school students have the opportunity to earn both high school and college credit through an agreement between the local high school district and Kirkwood Community College. With recommendation and approval from the high school district, students who have satisfied the prerequisite course work may enroll in individual classes or a sequence of career emphasis classes. Courses are available within the high school setting, Kirkwood distance learning and online classes or classes held at one of Kirkwood's campus locations throughout the seven-county service area. Students wishing to earn credit, but not through the process above, should contact Kirkwood's dean of students.

International Programs

Cedar Rapids Main Campus
134 Linn Hall
319-398-5579

Kirkwood's International Programs department is the home of global services. Students come to Kirkwood from more than 100 different countries around the world. This global village on our campus enriches the total learning environment. Students learn how to encounter differences with tolerance, as well as appreciate the rich complexity of our global economy. Students develop a mutual respect and understanding of everyone's interconnectedness throughout the year by participating in special activities as well as Study Abroad programs. The following resources are available:

- International advising.
- International recruiting with online application.

- Faculty exchanges.
- International grants/special projects.
- International Education Week.
- Diversity Cultural Celebration.
- Study Abroad programs.
- Study Abroad scholarships.

English Language Proficiency

3052 Cedar Hall
319-398-5581

To assure that students whose first language is not English are prepared to complete college-level course work, proficiency in English must be demonstrated. These students, including graduates of American high schools, international students, permanent residents, refugees and U.S. citizens, can demonstrate English language proficiency by earning one of the following:

- ACT composite scores of 15 or higher with English sub scores of 15 or higher.
- SAT verbal scores of 290 or higher.
- Standard TOEFL scores of 500 or higher or computer-based equivalent scores of 173 or higher.
- Kirkwood English Language Acquisition (ELA) placement scores of Level Six.

Note: All test scores must be earned within the two years prior to applying to the college.

With the exception of Level Five reading and writing bridge classes, students may not register for credit classes until they complete Level Five of the ELA program, unless they have written permission from the program coordinator.

Developmental credit is awarded for ELA classes with a maximum of two credit hours allowed toward an associate degree. Six elective credits are awarded for International Elements of Writing and International Effective Reading and Study Skills, as these are bridge courses.

Students without student visas who want to obtain the basic English language skills and knowledge necessary for employment and self-sufficiency should contact the Kirkwood Resource Center at 319-784-1510.

International Students

134 Linn Hall
319-398-5579

An international student is a person who has entered the United States with an F-1 or J-1 visa. In addition to demonstrating English language proficiency, international students wanting to enroll in credit classes or programs must be 18 years of age or older and submit:

1. International application forms.
2. Official secondary school and college transcripts.
3. Official evidence of adequate financial resources.
4. Health records.

The international student advisor is available in the International Programs office and is the primary designated school official for all international students.

Residence Qualifications

319-398-7600

Students enrolling at Kirkwood are classified as residents or nonresidents of Iowa, or as international students, for admission and tuition purposes by the college's One Stop office.

The college definition requires 90 consecutive days of residency within the state for a U.S. citizen or permanent resident (green card) prior to the start of enrollment. Students who come to the state of Iowa for the purpose of attending college will remain at nonresident status. Residency status is established at the start of the student's program and does not change until completion of the program.

Tuition

The Kirkwood Board of Trustees established current tuition charges in May 2012.

Iowa Residents

- $133 per credit hour, per semester.
- Tuition for an average, full-time schedule (15 credit hours) is $1,995 per semester.

Nonresidents

- $158 per credit hour, per semester.
- Tuition for an average, full-time schedule (15 credit hours) is $2,370 per semester.

International Students

- $266 per credit hour, per semester.
- Tuition for an average, full-time schedule (12 credit hours) is $3,990 per semester.
- Mandatory international student health insurance for one year is approximately $1,020

Included in tuition are costs for laboratory materials, student activities, registration and graduation. There are additional charges for some materials and private music lessons. Online course tuition is charged at resident rate.

Students can exchange courses of equal hours at no additional charge through the second week of the term. After the second week, students will be charged for any classes added, even if they dropped classes or are changing sections. Exceptions can be made with the approval of the department dean.

Tuition is due one week before the term starts.

Installment Payments

319-398-5679

The FACTS tuition payment plan is available to students who wish to pay their tuition in installments throughout the semester. This is not a loan program and there is no interest. The cost for the monthly payment plan is $25 per semester. Tuition fees may be budgeted by automatic bank payment or credit card option.

Refund of Tuition

All refunds are for tuition only and are computed as of the date the class is dropped via EagleNet or the class is withdrawn at the One Stop office or at a Kirkwood center.

- For a standard-length course, a student may drop up to the end of the first week and receive a 100 percent refund.

- For a standard-length course, a student may drop up to the end of the second week and receive a 50 percent refund.
- For a course that is one to eight days long, a student receives no refund beginning the first day of the course.
- For a course that is nine to 33 days long, a student may drop up to the end of the first day of the course and receive a 50 percent refund.
- For a course that is 34 to 81 days long, a student may drop up to the end of the second calendar day of the course and receive a 100 percent refund.
- For a course that is 34 to 81 days long, a student may drop up to the end of the fourth calendar day of the course and receive a 50 percent refund.

Refunds will be mailed after the second week of the term.

Financial aid recipients who withdraw from all classes are subject to refund guidelines stipulated in the Higher Education Act. Contact the One Stop office, 202 Kirkwood Hall, for the appropriate schedule.

Financial Aid

Cedar Rapids Main Campus
202 Kirkwood Hall
319-398-7600
finaid@kirkwood.edu

Iowa City Campus
112 Credit Center
319-887-3658

Financial aid is the difference between the cost of education and the amount the student (and parents) can be expected to contribute.

The Kirkwood One Stop office helps qualified students receive financial assistance, enabling them to pursue their academic goals.

To receive the maximum consideration for financial aid, students should apply as soon after January 1 as possible. Application for financial aid must be made each year.

Eligibility Requirements

All students seeking financial aid must:

1. Be enrolled and accepted in a diploma or degree credit program.
2. Be seeking a degree related to the educational objective.
3. Be a citizen of the United States or an eligible non-citizen.
4. Have completed a high school diploma or GED.
5. Not be in default for any previous education loans or owe a grant overpayment.
6. Be making satisfactory academic progress according to Kirkwood's published policy.
7. Attend the classes for which they are registered.

How to Apply for Financial Aid

To apply for financial aid, follow these steps:

1. Submit the Free Application for Federal Student Aid (FAFSA) at www.fafsa.gov as soon as possible after January 1.
2. Approximately three to five days after you submit your FAFSA online, the U.S. Department of Education (ED) will email your Student Aid Report (SAR). At this time, you can track your financial aid status at Kirkwood by logging into EagleNet and choosing "Financial Aid Checklist" from the Students menu.
3. The One Stop office may request additional documents, such as tax forms. The second item on the checklist, "Complete Additional Requirements," refers to missing information Kirkwood needs to complete your financial aid file. If the item is red, click on "My Kirkwood Documents" to determine what is missing. Use the "FA Documentation Help" link to understand what documentation is needed. Once the documentation has been received and processed, that checklist item will turn green.
4. If the third item on the list, "Financial Aid Awards Complete," is green, you know your award has been created. If this item is still red, allow 24 hours for processing, as we award students every weekday.
5. If your award contains loans and you want to accept them, you must click on "Activate My Loan." This will change the checklist item "Stafford Loan Activated," to green after processing.
6. The next two checklist steps, "Complete Entrance Counseling" and "Sign Your Promissory Note," are the final two parts of the loan activation process. You can complete these two steps at www.studentloans.gov. These steps take two to three days to process, so be sure to allow time for this item to change to green after you've completed these steps.
7. Once funds are released to your account to pay tuition, "Funds Made Available" will turn green. Choose the "My Bill by Term" link to view the disbursement.

Types of Grants and Loans

- Pell Grant – Everyone who completes a FAFSA is considered for the need based grant.
- Supplemental Educational Opportunity Grant – For students with the greatest financial need.
- College Work-study – Hourly wages earned while working at the college. Work hours are arranged with consideration of the student's class schedule.
- Iowa Vocational-Technical Grant – For vocational-technical, full-time students who are Iowa residents.
- Iowa Grants – Based on financial need with priority given to those most in need, who are Iowa residents.
- Perkins Loan – Low-interest loan with long-term payments beginning nine months after termination of at least half-time enrollment.
- Federal Direct Stafford Loan – All students are eligible for low, fixed interest rate loans. Payment is deferred while student is enrolled at least half time.

- Parent Loan for Undergraduate Students (PLUS) – Loan available for parents of dependent students. Payment may be deferred while student is enrolled at least half time.

Scholarships

Kirkwood awards more than $2 million in scholarships to students each year. Applications for most scholarships open October 1 and close March 31. Apply at www.kirkwood.edu/scholarships.

American Opportunity Tax Credit

The American Opportunity Tax Credit is available to eligible students during their first four years of college or postsecondary education. The tax credit provides tax relief for qualified higher education expenses, such as tuition, fees, books and course materials. The credit covers 100 percent of the first $2,000 and 25 percent of the second $2,000 during the qualified period. 40 percent of it is refundable.
To be eligible, a student must be enrolled in a degree, certificate or other program leading to a recognized education credential and be enrolled at least halftime. Students listed as a dependent on another person's tax return are not eligible for this credit.
Visit the Internal Revenue Service http://www.irs.gov/ http://www.irs.gov/ website for complete information on current tax law.

College Work-Study

Cedar Rapids Main Campus
1st floor Iowa Hall
319-398-4952

Iowa City Campus
Room 148
319-887-3947

Through College Work-Study, students can work at a part-time job and earn money for educational or personal expenses. The following are steps to obtaining a college work-study position:

- Apply for and be awarded federal financial aid.
- Attend an orientation session. During this session, students will complete I-9 and W-4 forms.
- Contact the supervisors of the work-study positions they are interested in to schedule interviews.
- If hired, students must notify the college work-study coordinator so their names can be taken off the active list of students seeking employment. If the students are not hired, they must contact the college work-study coordinator to interview for different positions.

Academic Policies

For information about current student policies, please go to: http://www.kirkwood.edu/student_policies
http://www.kirkwood.edu/student_policies

Academic Resources

Student Development (Counseling)

Cedar Rapids Main Campus
108 Iowa Hall
319-398-5471

Iowa City Campus
319-887-3658
www.kirkwood.edu/counseling

Counselors are available for students who need help with academic concerns, career plans or personal matters. A counselor or intake coordinator is available on an appointment or drop-in basis to provide general Kirkwood information or refer students to the appropriate staff member, agency or counselor. The following assistance and services are available:

- Personal counseling
- Student advocacy
- Career and educational planning
- College/university transfer information
- Resource library
- Course and curriculum information
- Personal development classes (Human Potential Lab, Career Decision-making, Job-seeking Skills, other credit classes)

The office also provides a resource library of brochures and articles for students to browse. Topics range from depression to midlife career changes and how to prepare for exams.

Career Services

Cedar Rapids Main Campus
108 Iowa Hall
319-398-5471

Career Services assists students, alumni and community members seeking and/or preparing for employment

- Post resumés and search current opportunities on our jobs website, www.kirkwood.edu/jobs
- Use our resource library, with extensive Internet sites bookmarked for research
- Come to job fairs and on-campus recruitment events
- Receive personalized career search assistance
- Use career-related programs and workshops that are available during day and evening hours
- Career Directions workshops
- Free job searching workshops in resumé writing, applications, correspondence writing, interviewing, mock interviewing and job searching via the Web
- Job Club open lab
- Individual and group support
- Myers-Briggs Type Indicator Assessment
- Choices Planner Online Assessment
- Resumé critiquing
- Assistance from local employers

Job Club

Cedar Rapids Main Campus
115 Iowa Hall
319-398-5471

Kirkwood's Job Club is a place where job seekers share ideas, network with others and view job listings. Students can use our computers, telephones and career-related workshops, including:

- Career Directions workshops.
- Free job searching workshops in resumé writing, applications, correspondence writing, interviewing, mock interviewing and job searching via the Web.
- Job Club open lab.
- Individual and group support.
- Myers-Briggs Type Indicator Assessment.
- Choices Planner Online Assessment.
- Resumé critiquing.
- Assistance from local employers.

Advising and Transfer Center

Cedar Rapids Main Campus
108 Iowa Hall
319-398-5540

Iowa City Campus
112 Credit Center
319-887-3658

Marion Center
Room 109
319-398-398-1052

Resource Center
Room 3006
319-398-1050

att@kirkwood.edu
www.kirkwood.edu/advising

Academic advisors are available to:

- Assist with developing academic plans.
- Clarify course requirements.
- Refer students to support services, if needed.

Students who are planning to transfer to four-year institutions can receive assistance in the Advising and Transfer Center. The center serves as a liaison between Kirkwood and four-year colleges and universities. Whether it is a viewbook, application or schedule of upcoming four-year college visits, the Advising and Transfer Center can provide many pieces of information to interested students.

EagleNet

EagleNet is your online access to Kirkwood resources and registration information. EagleNet allows you to:

- Check your grades
- Register for classes

- Drop classes
- Get your class schedule
- Check your tuition bill
- Check your financial aid status; and more

For a complete list of EagleNet features and functions, go to www.kirkwood.edu/eaglenet and click on EagleNet for Students.

Your EagleNet user ID is sometimes called your "k" number. Your k number is the letter k and a sequence of seven numbers (example: k0003750). Your k number and password are kept confidential. If you forget your k number, go to the One Stop office, 2nd floor, Kirkwood Hall and provide photo identification.

Project START

Cedar Rapids Main Campus
115 Iowa Hall
319-398-4934

Project START (Supported Training and Retraining) helps students overcome barriers they may encounter while reaching their academic and career goals. We can help students by providing financial assistance, helping with study skills and test taking, monitoring class progress, arranging special assistance, and serving as an advocate with instructors and other college personnel.

START assistance is available for a maximum of two or three consecutive semesters. Referrals are accepted on an ongoing basis from community agencies and Kirkwood counselors, instructors and staff. Students must apply and be accepted into the program.

Project START began as a cooperative effort between Kirkwood and the Hall-Perrine Foundation and receives continued funding from the Kirkwood Foundation.

Student Advocacy

Cedar Rapids Main Campus
115 Iowa Hall
319-398-5471

Students, faculty, staff, service providers and visitors who are involved with any aspect of the college's mission are members of the Kirkwood learning community. As such, we share certain rights and responsibilities to each other and the learning process, among them the right to a positive educational climate and the responsibility to uphold the values that create and sustain this climate including:

- Valuing diversity.
- Respecting and managing resources.
- Promoting opportunities for educational growth and development.
- Encouraging a spirit of ethical judgment.
- Learning to engage in a sustained and independent search for truth.
- Maintaining an orderly, civil and safe campus environment.

If you have concerns about these areas, contact the dean of students, 115 Iowa Hall, 319-398-5471.

Learning Services

Cedar Rapids Main Campus
2063 Cedar Hall
319-398-5574
www.kirkwood.edu/learningservices

Learning Services offers a variety of courses and support services to students. Course offerings include reading, math, writing, workplace communication and personal skill development. Support services include tutoring, assistive technology, counseling and advising, Internet and computer-based instruction and skill development, aptitude and skill assessment, electronic texts, disability accommodation services and sign language interpreters.

Test Centers

Cedar Rapids Main Campus
2055 Cedar Hall
319-398-5456

Iowa City Campus
243 Credit Center
319-887-3642

Marion Center
Room 109
319-398-1052

Resource Center
Room 3006
319-398-1050

A wide variety of testing services are provided to prospective students, current students, graduates and the community at large. Prospective students participate in COMPASS (computer adaptive) assessment testing to help determine their readiness for college-level classes. Once prospective students complete COMPASS, advisors help them interpret the results. Current students use the center for department make-up exams and Distance Learning exams.

English Language Acquisition (ELA) tests are given to incoming students whose native language is not English. The Emergency Medical Services testing, retake examinations and a variety of other tests are provided as a service to community members.

Personal Achievement

Cedar Rapids Main Campus
2063 Cedar Hall
319-398-5574

Resource Center
Room 3006

319-398-1050

Personal Achievement offers classes in writing, mathematics, pre-algebra, basic study skills or a 12-credit college prep block, Basic Writing and How to Be Successful in College. Upon enrollment, a short interview and diagnostic testing help identify the student's academic strengths and weaknesses. Based upon the results, a plan of instruction is developed with each student. Classes are offered in an individualized or small-group setting.

Disability Support Services

Cedar Rapids Main Campus
2063 Cedar Hall
319-398-5574

A student who has a disability and needs accommodations because of the disability should file an accommodation application with Learning Services,

2063 Cedar Hall. Once the student completes the application and supplies documentation, a case manager is assigned to assist the student in the development of an academic plan and to implement reasonable accommodations. Application forms can be obtained in Learning Services.

Skill Center

Cedar Rapids Main Campus
2063 Cedar Hall
319-398-5454

The Skill Center is a CARF-accredited Comprehensive Vocational Evaluation and Employment Skill Training program that helps people with disabilities determine their potential for competitive employment or further educational training.

Vocational evaluation assessment activities, both diagnostic and prescriptive, are designed to guide them into employment or training and are based on their needs and consist of a broad-based series of testing and activities. Areas of evaluation include, but are not limited to, interest identification, career exploration, food service, health care, child care, custodial, business occupations and industrial technology. Employment Skill Training is offered to provide specific training so they can compete successfully for jobs or advance in their current positions.

Additional services include job-seeking skill development, transition into college classes and supported education. Job-seeking skill development services can be provided to help Skill Center students obtain employment. These services include résumé preparation, interview techniques and application procedures. When Skill Center students plan to further their education, a variety of services are available.

Expected outcomes include recommendations for job placement, additional training or education needs, other community services needs, and support needed for vocation or academic success. Students receive information to make informed choices to guide them into employment.

Students enrolled in credit classes can receive assistance through the Skill Center's Supported Education program. Students meet regularly with staff members who offer encouragement, monitor their progress and keep in touch with their instructors to help them successfully complete their education programs. Supported Education is a comprehensive system that provides individualized educational assistance to students enrolled in vocational training programs at Kirkwood. Time management, study techniques, advocacy, tutoring, independent study time and counseling are provided to maximize their potential for successful completion of vocational training programs.

Student Support Services

Cedar Rapids Main Campus
2063 Cedar Hall
319-398-5574

Student Support Services is a federally-funded TRIO grant project that helps eligible participants persist and graduate from college. The project offers counseling, tutoring and computer writing/editing services.

Recipients of these services must be citizens or nationals of the United States who are currently enrolled in a credit program. They must also meet at least one of the following requirements:

1. first-generation student;
2. financial aid eligible; and/or
3. presence of a disability.

Counselors are available to help students with personal, financial and academic issues including guidance in the successful transition into a college environment. A writing instructor tutors students in the progressive steps in planning, organizing, writing, revising and proofreading written academic assignments. Instruction is also available on the basic use of word processing software and the Internet.

Tutoring Services

Cedar Rapids Main Campus
2071 Cedar Hall
319-398-5425
www.Kirkwood.edu/tutoring

Iowa City Campus
112 Credit Center
319-887-3658

Tutoring services are available by request for any student enrolled in a credit course at Kirkwood. There is no charge to the learner, and tutoring is available every term, day and evening.

Many tutors are Kirkwood students who are paid by the college for their services. Students interested in being tutors may apply through the Tutoring Services office.

Communications Skills Program

Cedar Rapids Main Campus
2033 Cedar Hall
319-398-5899 ext. 5825

This program develops communication competencies in Career and Technical Education students. Courses within the Communications Skills program build on one another to provide students with practical, applied knowledge of how to communicate in the workplace.

VITAL

Cedar Rapids Main Campus
2042/2044 Cedar Hall
319-398-5574

The Vocational Individualized Training and Learning (VITAL) program is jointly administered by Kirkwood, Grant Wood Area Education Agency and local high schools. VITAL provides vocational training and support services to students who were enrolled in special education programs in high school and are now enrolled in Applied Science and Technology programs at Kirkwood. For information about referral procedures for the VITAL program, contact the dean of Learning Services.

Perkins Vocational Education Services

Cedar Rapids Main Campus
2063 Cedar Hall
319-398-5574

This supported education service is a comprehensive system providing individualized support to students enrolled in Applied Science and Technology programs. The Perkins staff functions as advocates and advisors to students

and maintains ongoing communication with students' instructors to monitor their progress. An Individualized Education Plan is developed for each student to identify specific problems or barriers the student is encountering and details intervention strategies to overcome these barriers.

Other Educational Opportunities

College 101

Cedar Rapids Main Campus
115 Iowa Hall
319-398-5471

College 101 is a three-credit-hour course offered to first-time Kirkwood students, aimed at developing the skills needed to be successful. Some of the course topics include:

- Adjusting/transitioning to college.
- Learning college-level study skills.
- Planning career pathways.
- Connecting to the college culture.
- Developing a plan of study.
- Advancing personal growth.
- Continuing education after Kirkwood.

Linked Courses

Linked Courses are pairs, or clusters, of courses a student takes with the same group of other students. Usually, these courses are scheduled back-to-back, and the faculty members teaching them weave syllabi, reading and writing assignments so concepts, ideas, practices and approaches are enriched in each course.

Service Learning

1008 Cedar Hall
319-398-4911

Students can combine community service with classroom learning in a number of Kirkwood courses. A faculty member may assign community service work as a course requirement. The individual faculty member and the coordinator of Student Learning jointly coordinate the Service Learning project with an appropriate outside service agency. Students engage in service to address genuine community needs. The service is directly related to their academic course work. Students will also engage in structured reflections, which may take many different forms: journals, portfolios, interviews, oral, and/or written reports.

Honors Program

Kirkwood's Honors program challenges students to be the best in their chosen fields by working closely with Kirkwood faculty members within the discipline and completing special honors projects.

Phi Theta Kappa

Phi Theta Kappa is the only internationally-recognized honor society for students attending two-year colleges. Kirkwood's local chapters are Alpha Eta Rho, for main campus students, and Beta Lambda Tau, for students at the Iowa City Campus.

Both organizations give achievement-minded Kirkwood students the opportunity to network with and energize one another, participate in service projects within the community and be part of a highly-esteemed group on campus.

Members of Alpha Eta Rho or Beta Lambda Tau must complete 12 credit hours at Kirkwood and have a 3.5 or greater cumulative GPA.

Honors Program Credits

The Kirkwood Foundation pays for honors program credits. Eligible students may receive up to four free honors credits.

Students eligible to participate in the Honors program should contact the Honors program faculty chair. In order to register for one-credit honors projects, students must submit a copy of their learning contract and have it signed by the director. Students then need to submit the completed add slip to the One Stop office and send copies of the honors project learning contracts to the designated recipients.

Study Abroad

Students earn college credits while embarking on once-in-a-lifetime adventures through Kirkwood's Study Abroad programs. They greatly expand their horizons by stepping outside the conventional college environment, meeting and traveling with other college students, and fully experiencing world cultures.

Financial aid can be applied to Study Abroad programs and scholarships are also available. For more information about Kirkwood's Study Abroad programs visit www.kirkwood.edu/studyabroad.

Veterans Services

Cedar Rapids Main Campus
2nd floor Kirkwood Hall
319-398-5633
www.kirkwood.edu/va

Kirkwood is committed to serving those in the community who have served or are serving in the military. Almost all programs are approved by the Department of Education for payment of Department of Veterans Affairs educational benefits. The Veterans Affairs certifying official is a full-time staff person who is available to assist veterans in the application process to ensure the students' programs meet federal guidelines.

As another service to our student-veterans, Kirkwood offers a Veterans Lounge, available to all veterans and open during regular college hours. Located on the third floor of Iowa Hall next to the Amana Room, the Veterans Lounge provides a spot to check emails, quietly study or just to enjoy camaraderie with fellow veterans.

Veterans Benefits

Veterans and members of the Selected Reserve may be eligible to receive educational benefits while enrolled in and pursuing an approved program of education and training. Veterans have 10-14 years from their date of active duty discharge in which to use their educational benefits.

Spouses, of veterans who are rated by the VA and found to be totally and permanently disabled from a service-related disability or have died due to a service-related disability, have 10-20 years from their initial date of eligibility. Children of these veterans have until age 26.

Members of the Selected Reserve are required to remain actively drilling in order to maintain eligibility. Reservists who were ordered to active duty after September 11, 2001, in response to war or national emergency, have no delimiting date as long as they remain in their reserve component.

To be eligible for veterans educational benefits, students must:

1. Be eligible under one of the benefit programs of the Department of Veterans Affairs;
2. Be pursuing courses at least as half-time students to receive monthly benefits;
3. Maintain a 2.0 grade point average for graduation or show satisfactory progress each term while on academic probation;
4. Pursue one program at a time;
5. Take only courses applicable to stated, current program.

Servicemembers Opportunity Colleges

Kirkwood is designated as a member of the Servicemembers Opportunity Colleges (SOC), a group of more than 1,200 colleges and universities throughout the world providing postsecondary education to members of the military.

As a SOC member, Kirkwood recognizes the unique nature of the military lifestyle and has committed itself to easing the transfer of relevant course credits, providing flexible academic residency requirements and crediting learning from appropriate military training.

Veterans Education Outreach Program (VEOP)

Recognizing students who receive veterans educational benefits periodically need special services, the college has established the VEOP. The Veterans Affairs certifying official:

- Coordinates veterans' services with other campus services such as admissions, financial aid, counseling or placement.
- Maintains communication with military Reserve and National Guard units, as well as local members of the active military, to identify and serve people eligible for benefits and entitlements.
- Serves as the principal contact person and advocate for eligible students attending or seeking to attend Kirkwood. This may include facilitating admission, evaluating military credits, developing and monitoring degree programs, or serving as an information-referral source.

Further questions should be directed to the Veterans Affairs certifying official.

Vocational Rehabilitation

Cedar Rapids Main Campus
123 Iowa Hall
319-398-4925
www.ivrs.iowa.gov

The Vocational Rehabilitation office works with Iowans with disabilities to:

- Find employment or expand skills to increase employment possibilities.
- Gain accessibility to school or work and increase independence.
- Find financial support through counseling and guidance.
- Assist students to determine a viable vocational direction.

Library Services

Cedar Rapids Main Campus
Benton Hall
319-398-5697
Toll free: 1-866-452-8504

Iowa City Campus
319-887-3613
Toll free 1-866-452-8504
www.kirkwood.edu/library
library@kirkwood.edu

Kirkwood's Cedar Rapids and Iowa City libraries are open to all students, staff, faculty and area residents. The librarians are experts in helping you conduct college-level research by defining what information you need, finding material, evaluating sources, organizing your research, and communicating your findings clearly and ethically. If the information you need is not available in our physical libraries, electronic databases, or ebook collections, we will order it for you from another library through the Inter Library Loan program.

If you are working from home, are a distance education student or attend class at one of the Kirkwood centers, the same library services are available to you. The library website provides a full array of resources and services that you would find inside the libraries, along with instant messaging reference and handouts on creating citations and finding reliable websites. Librarians are available by phone to help you with your research and can send library materials to Kirkwood centers for your use.

Information Resources & Technology

In addition to quality books, journals and DVDs to use in your research, we have many online databases of magazine, journal, news and reference articles that you can access from any campus computer or your home computer. If you prefer working from a library table or relaxing in a stuffed chair as you write, you may check out a laptop for use within the library or bring your laptop to connect with the campus wireless network. Wireless Internet access is available in both libraries, and all library laptops have Microsoft Office.

Facilities

The Cedar Rapids main campus library is located in Benton Hall. You will find many places to study on the first and second floors, comfortable seating, study carrels and natural lighting. The second floor is designated as a quiet study area and has several group study rooms.

The Iowa City Campus library provides the same services but on a smaller scale. Study space, comfortable seating, individual carrels and a group study room are available. You will find the library in the Credit Center Building in the middle of the first floor.

Information Literacy SDV-119

This is a one credit-hour class taught by librarians who introduce students to the library research process. Students learn to systematically and efficiently locate, evaluate and use information through hands-on practice. Students

will learn skills essential for any college student, but the class is especially helpful for students planning to transfer to a four-year college.

Writing Centers

Cedar Rapids Main Campus
3067 Cedar Hall
319-398-5411 ext. 5055

Iowa City Campus
134 Credit Center
319-887-3658

Marion Center
Computer Lab 104
319-398-1052

Students go to the Writing Center when they need objective readers for paragraphs, essays, research papers, journals, book reports, resumés and other writing-related activities. The writing center staff does not proofread work, but helps students improve their writing.

Writing Center hours are posted each semester. Students may stop by at any time; however, it is wise to call ahead for an appointment. Students taking classes at other Kirkwood locations may fax papers to the Writing Center and schedule a telephone conference.

The Center for Online Writing provides the same services as the Writing Center, except that no appointment is needed, and all help is transmitted via email and email attachments. Access the Center for Online Writing from the Kirkwood home page or at www.kirkwood.edu/faculty/rschlue/kcccow/cow.htm.

Distance Learning

Distance Learning

Online
Cedar Rapids Main Campus
319-398-4958

Classes offer students the flexibility to learn outside the traditional classroom. Courses start on specific dates in August, October, January, March or May and finish in 16 weeks (12 weeks for the summer/May term). A qualified teacher, who is available to answer questions, respond to assignments and grade exams, designs each course. Courses are offered in an online format, and many will have weekly assignments. All courses meet the goals and objectives of the same courses offered in the traditional classroom and transfer to other institutions in the same way.

Distance Learning courses are delivered online, which provides an enriching and engaging environment for learning. There are a variety of resources available to help students succeed online, including a student help desk and online tutoring.

For more information about Distance Learning go to www.kirkwood.edu/distancelearning.

Interactive Video Classrooms

Cedar Rapids Main Campus
319-398-1262

Kirkwood students can take courses and programs over an interactive instructional video system that links instructors to students at many different locations. This technology provides two-way audio and video communication. Interactive video classrooms greatly increase the number of courses the college can offer at Kirkwood centers and other locations. The delivery system saves students time and travel, while providing an interactive learning environment with the instructor and other students. Kirkwood also offers college credit courses over the statewide Iowa Communications Network (ICN). For more information go to www.kirkwood.edu/distancelearning.

Adult Accelerated Learning Classes

Kirkwood Resource Center
1030 Fifth Ave. SE, Cedar Rapids
319-398-1050
accelerated@kirkwood.edu
www.kirkwood.edu/accelerated

Adult Accelerated Learning classes are designed for working adults who want to further their education while balancing work and family. After earning an associate degree from Kirkwood, you can transfer to a four-year college or university to complete your bachelor's degree.

You can take courses on evenings and weekends, once-a-week, and in five- and 10-week blocks. Outside projects and assignments complement the abbreviated class meeting schedule.

If you're interested in Adult Accelerated Learning, you need a minimum of three years work experience, to be at least 21 years old and demonstrate competencies in reading, writing and math, either through COMPASS test scores or previous college experiences.

Secondary Programs

Resource Center
1030 5th Ave. SE
Suite 100
Cedar Rapids, IA 52404
319-784-1510

Adult Literacy

The Adult Literacy program assists adult learners to become literate and obtain the knowledge and skills necessary for employment and self-sufficiency. The program also assists adults in the completion of a secondary school education.

Kirkwood coordinates volunteer tutor programs in Cedar Rapids, Iowa City and Washington. Tutors are recruited, trained in basic teaching techniques, and matched with an adult who can benefit from instruction in English, reading or math. Tutoring services are available to adults who have not earned a secondary diploma or its equivalent.

Through the Adult Literacy program, Kirkwood offers classes to English language learners. Instruction focuses on the development of English skills in life and work contexts. Classes are offered in Cedar Rapids and Iowa City. Volunteer tutors may also be available to learners who are unable to attend the classes.

High School Completion Programs

Students 17 years of age or older who have not completed their high school education may be eligible to earn a diploma through Kirkwood's High School Completion program. More than 50 independent study, online and

structured courses are offered at Kirkwood learning centers located in the seven-county service area.

Computers are available to provide students with course work, enrichment activities and vocational experience. Students are also encouraged to take interest and career assessment inventories, tour program facilities on the main campus, and explore other career and academic resources as part of their high school experience.

Preparation and testing for the General Educational Development (GED) diploma are also available at Kirkwood learning centers. Students may study independently, work with a teacher or tutor, use GED instructional software, and view instructional videos to learn or review GED competencies.

High School Distance Learning (HSDL) Program

Students unable to attend a Kirkwood learning center can earn high school credits or transfer credits through the High School Distance Learning program. Often, students who are enrolled in high school complete courses through this program to meet the requirements of their local high school diploma. Students can also complete distance learning courses and earn the Kirkwood Adult High School diploma. Courses are available in packet and online formats.

College Credit in High School

Kirkwood partners with school districts to provide students the opportunity to earn college credit while in high school. Students ready for the rigor of college coursework can earn college credit by enrolling in: Concurrent Enrollment courses available at the high school; Post Secondary Enrollment Option (PSEO); and career-focused, Career Edge Academy programs. For a list of current programming and availability, please visit: www.kirkwood.edu/earncredit.

Corrections Education

Through a contract with the Iowa Department of Corrections, Kirkwood manages the educational programs offered to offenders at the Anamosa State Penitentiary and the Iowa Medical and Classification Center in Oakdale. Literacy, ESL, GED preparation and testing, and life skills are the instructional priorities.

Student Life & Services

Student Life

Cedar Rapids Main Campus
230 Iowa Hall
319-398-5578

Iowa City Campus
148 Credit Center
319-887-3947

www.kirkwood.edu/studentlife

Student Clubs and Organizations

Clubs are formed through academic programs and special interest groups and are given formal recognition by the Student Life office. Faculty or staff members serve as advisors to both groups. Each club or organization elects officers and a Student Leadership Council representative. Information about clubs and organizations may be obtained through Student Life.

Student Leadership Council

This group represents the Kirkwood student body and plans and promotes events on campus. Members come from the various clubs, teams, and other groups on campus or join as at-large members. This leadership organization is an extension of the Student Life office and can be a vital part of the student experience at Kirkwood. It provides a networking opportunity between organizations at Kirkwood and allows students to be involved with various aspects of the student experience, including the entire event planning process, community service, public relations and promotion of other activities on campus.

Social and Special Events

Student Life coordinates several events and activities throughout the year. From daytime events such as live music or bingo to evening entertainment, including hypnotists, comedians and the Glow Party, there is always something going on at Kirkwood. All events are free for students to attend. Information on upcoming activities can be obtained through Student Life.

Kirkwood EagleCard

104 Iowa Hall
319-398-5680
www.kirkwood.edu/eaglecard

The EagleCard is the official Kirkwood Community College identification card. It is *required* for the following:

- Buying books at the Kirkwood bookstores.
- Selling books back at book buy-back time.
- Checking out books from the Kirkwood library.
- Admittance to the Kirkwood Rec Center, computer labs, and athletic and entertainment events.

A student has the option of depositing money on his/her EagleCard account and using it as a debit card. The EagleCard is accepted at on-campus vending machines, food services, Kirkwood Bookstores, Kirkwood C-store and select off-campus vendors.

Students can obtain their EagleCard at the EagleCard office or the Rec Center, both at the Cedar Rapids campus; the Iowa City Bookstore; or any county center office.

Bookstores

Cedar Rapids Main Campus
Benton Hall
319-398-5469

Iowa City Campus
1st floor Credit Center
319-887-3640

In addition to providing textbooks for all Kirkwood courses, both the Cedar Rapids and Iowa City bookstores also carry supplies, logo apparel, gifts, computers and software.

At the end of each semester, students can sell back previously purchased books. A representative from a used book wholesaler is on campus to handle the book buyback.

Bus Service

Kirkwood students can ride Cedar Rapids Transit for free. Just show your EagleCard student ID and get a free ride to and from campus on bus route 7.
To purchase bus tickets for other routes in town that are not free, show your EagleCard at the Kirkwood Bookstore to purchase any of these packages:

1-day pass: $3
10 rides for: $10
31-day pass: $30

For a complete list of bus routes and bus stop locations, visit Cedar Rapids Transit and www.cedar-rapids.org/transit. The Iowa City Campus is accessible by Iowa City Transit bus service, and monthly passes are available at the Iowa City bookstore.

Campus Health Services

Cedar Rapids Main Campus
132 Iowa Hall
319-398-5588

Iowa City Campus
146 Credit Center
319-887-3949

A registered nurse and paramedic under direction of a consulting physician staff the Campus Health office. Services include emergency treatment of illness and injury and assistance in obtaining services of local physicians or agencies. Over-the-counter drugs, TB testing and allergy shots (with a doctor's order) are available. The student must cover the cost of hospitalization, doctor's fees, prescription medicine, X-rays and laboratory fees.

Campus Health presents educational health programs on substance abuse, nutrition, infectious disease and sexual awareness. Confidential counseling on

a variety of health-related problems is also offered.

Health insurance is recommended for students. While the college does not offer an insurance plan, information on insurance is available from Campus Health.

Housing

Cedar Rapids Main Campus
230 Iowa Hall
319-398-7647

Iowa City Campus
319-887-3947
www.kirkwood.edu/housing

Kirkwood does not provide on-campus housing, but more than 4,000 students live in privately-owned apartments near the campus. The housing office provides information and assistance with roommate issues and serves as a liaison between apartment managers and student tenants. The Cedar Rapids Housing office coordinates apartment showings, which are available by appointment.

Traffic and Parking

Thousands use the Kirkwood campuses each day. For all of our protection, Campus Security will enforce traffic regulations. Students may park in any of the non-designated parking lots. Disability (handicap) spaces are reserved for those vehicles that display valid state of Iowa disability identification. Visitor spaces are for campus guests and should not be used by Kirkwood students, faculty or staff. Areas marked Blue Permit are reserved for faculty and staff vehicles that display valid blue parking permits. Taking parts of two spaces, or parking on the lawn, sidewalks or roadways is not permitted.

Reckless driving and speeding are prohibited at all times. Kirkwood's traffic and parking rules are based upon Section 206C.14 of the Code of Iowa. As the college has campuses located in various cities and towns, the local laws and ordinances also apply. Traffic and parking rules will be enforced as shown in the violations chart.

Administrative fees for violations will be considered the same as any other debt owed to the college. If a ticket is received, students must do one of the following:

- Pay the fee at the cashier, 202 Kirkwood Hall.
- Mail the fee to Kirkwood in the envelope provided.
- Submit an appeal form within 48 hours. Appeal forms may be obtained and completed at www.kirkwood.edu/security, click "Parking."

Campus Security

319-398-1774

Kirkwood Campus Security officers patrol campus, respond to emergencies and other calls for service, conduct traffic checks on campus, walk through the campus buildings, staff special events, and facilitate a variety of safety and security presentations.

Kirkwood Campus Security officers may ask people for identification to determine whether they have legitimate business at the college. Campus Security officers have the authority to investigate offenses involving rule violations and to make referrals to the appropriate area of the college. Campus Security officers do not possess arrest powers and do not carry firearms. Criminal incidents are referred to the local police, who have jurisdiction on campus.

Campus Security works closely with local, state and federal police agencies. Through coordination with local law enforcement, criminal activity by students at off-campus locations is monitored and recorded. This information is referred to the appropriate area of the college.

Services (offered 24 hours a day, 365 days a year):

- Enforcement of college, local, state, and federal laws and regulations.
- Investigative reports and criminal investigation.
- Escorts for students, faculty and staff.
- Unlocking and jump starting vehicles on campus.
- Reporting and resolving environmental safety issues, exterior lighting, signage and other physical hazards.
- Monitoring and enforcing driving regulations.
- Blue Light Emergency Phones located across the main campus.
- Safety and security presentations, including personal safety, alcohol and drug abuse, and sexual assault prevention.

Campus Security Escorts

Although Campus Security can escort students to and from vehicles and buildings at anytime, it is a good idea to use this service when walking on campus during hours of darkness.

Campus Security Act

Each year in compliance with federal law, Campus Security prepares a Campus Security publication for all Kirkwood students, parents, faculty and staff. In this report, you will find campus crime statistics for the last three years, as well as safety-related policy and procedures. Information is prepared in accordance with the Crime Awareness and Campus Security Act enacted by Congress in 1990. The act was amended in 1992, 1998 and 2000. In 1998 it was renamed the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act. The Clery Act, as it is commonly referred to, requires all institutions of higher education give timely warnings of crimes that represent a threat to the safety of students or employees, and to make public their campus security policies. It also requires that crime data is collected, reported and disseminated to the campus community, and is also submitted to the U.S. Department of Education. The act is intended to provide accurate, complete and timely information about safety on campus, so that you make informed decisions.

To obtain a printed copy of the report, contact Campus Security, 6301 Kirk-

wood Blvd. SW, Cedar Rapids, Iowa 52406, or call us at 319-398-5561. This report is also available at www.kirkwood.edu/security.

Kirkwood History

Kirkwood is a publicly-supported college that serves Benton, Cedar, Iowa, Johnson, Jones, Linn and Washington counties in eastern Iowa. Kirkwood operates under the regulations of the Iowa Department of Education and is governed by a publicly-elected, nine-member board of trustees.

In January 1965, a steering committee conducted a study to establish a vocational school to serve parts of eastern Iowa, then known as Area X. Soon after this local study, the Iowa General Assembly approved legislation that created a system of community colleges throughout the state.

On July 1, 1966, Kirkwood was officially established, originally called "Area X Community College." The college immediately assumed responsibility for the federally-funded vocational/technical programs the Cedar Rapids Community School District had provided since 1964. The college added the Arts and Sciences, Student Services and Community Education divisions a year later. In 1969, the college board of trustees decided on a new name—"Kirkwood Community College," to honor Samuel J. Kirkwood, Iowa's governor during the Civil War years.

In 1982, Kirkwood became a board member of the League for Innovation in the Community College, a consortium of 19 of the nation's finest two-year colleges.

Kirkwood awards Associate of Arts and Associate of Science degrees that transfer to four-year colleges and universities. Graduates in Applied Science and Technology programs are prepared to enter specialized technical careers.

Kirkwood Community College is accredited by the Iowa Department of Education and by The Higher Learning Commission, A Commission of the North Central Association of Colleges and Schools.

The Higher Learning Commission
230 South LaSalle Street, Suite 7-500
Chicago, IL 60604-1411

The Higher Learning Commission can be reached at 800-621-7440 or www.ncahlc.org. Appropriate professional associations within their respective fields accredit individual college programs.

Legal Basis of the College

The law under which Kirkwood was established and continues to operate, Section 280A in the Code of Iowa, states in part that:

Area community colleges offer, to the greatest extent possible, educational opportunities and services in each of the following areas:

1. The first two years of college work including pre-professional education.
2. Vocational and technical career training.
3. Programs for in-service training and retraining of workers.
4. Programs for high school completion for students of post-high school age.
5. Programs for all students of high school age who may best serve themselves by enrolling for vocational and technical training while also enrolled in a local high school, public or private.
6. Student personnel services.
7. Community services.
8. Vocational education for persons who have academic, socioeconomic or other disabilities that prevent them from succeeding in regular vocational education programs.
9. Training, retraining and all necessary preparation for productive employment of all citizens.
10. Vocational and technical training for persons who are not enrolled in high school and who have not completed high school.

Arts and Sciences Core Courses

Applicable to A.A., A.S. and A.S./C.O. degree requirements. One diversity course is required for the A.A. degree. Courses with (D) before the course number satisfy the diversity requirement.

Communication - Speech

SPC-101	Fund of Oral Communication	3
or		
SPC-112	Public Speaking	3

Communication - Writing

ENG-120	College Writing (Composition I-II equivalent)	5
or		
ENG-105	Composition I	3
and		
ENG-106	Composition II	3
or		
ENG-108	Composition II: Technical Writing	3

History - Cultures

Students earning an A.A. degree must complete three credit hours from list 1 and three credit hours from either list 1 or list 2.

Group 1 – Introductory Courses

(D) ANT-105	Cultural Anthropology	3
(D) ASL-171	American Sign Language II	4
(D) ASL-241	American Sign Language III	3
(D) ASL-271	American Sign Language IV	3
(D) CLS-140	Understanding Cultures: The Mideast	3
(D) CLS-151	Understanding Cultures: Latin America	3
(D) CLS-159	Understanding Cultures: Indigenous Central America	3
(D) CLS-162	Understanding Cultures: Pacific Societies	3
(D) CLS-165	Understanding Cultures: Modern Japan	3
(D) CLS-167	Understanding Cultures: Modern China	3
(D) CLS-171	Understanding Cultures: Sub-Saharan Africa	3
(D) FLF-142	Elementary French II	4
(D) FLF-241	Intermediate French I	4
(D) FLF-242	Intermediate French II	4
(D) FLG-142	Elementary German II	4
(D) FLG-241	Intermediate German I	4
(D) FLG-242	Intermediate German II	4
(D) FLS-142	Elementary Spanish II	4
(D) FLS-241	Intermediate Spanish I	4
(D) FLS-242	Intermediate Spanish II	4
HIS-121	Ancient Mediterranean World	3
HIS-122	Europe-Age of Monarchy	3
HIS-123	Europe-Age of Revolution	3
HIS-124	Europe-Age of Nationalism	3
HIS-151	U.S. History to 1877	3
HIS-152	U.S. History Since 1877	3
HIS-291	History of Science	3
(D) REL-101	Survey of World Religions	3
(D) REL-120	Judaism, Christianity & Islam	3
(D) REL-130	Intro to Religions of the East	3

Group 2 – Other Courses

HIS-135	Modern World Military History	3
(D) HIS-221	Holocaust/Genocide: Memory & Literature	3
(D) HIS-254	American Indian History	3
(D) REL-125	Introduction to Islam	3
(D) REL-140	Religion in the United States	3
(D) REL-160	Religions of China	3

Humanities

Students seeking an A.A. degree must select one course from 1, one course from 2 and one course from 1, 2 or 3.

Group 1 – Arts and Ideas

ART-101	Art Appreciation	3
ART-173	Ceramics	3
ART-184	Photography	3
ART-203	Art History I	3
ART-204	Art History II	3
CLS-190	Culture and Technology	3
DRA-101	Introduction to Theatre	3
DRA-116	Film Analysis	3
DRA-125	Introduction to Play Analysis	3
HUM-105	Working in America	3
HUM-116	Encounters in Humanities	3
HUM-123	U.S. Film History	3
HUM-124	World Film History	3
MUS-100	Music Appreciation	3
MUS-209	Topics in Western Music History	3
PHI-101	Introduction to Philosophy	3
PHI-105	Introduction to Ethics	3
PHI-111	Basic Reasoning	3
PHI-130	Philosophy of Human Nature	3

Group 2 – Literature

(Prereq: ENG-105 or ENG-120)

LIT-203	Forms of Literature: Story Cycle	3
LIT-204	Forms of Literature: Nonfiction	3
LIT-205	Forms of Literature: Drama	3
LIT-206	Forms of Literature: Fiction	3
LIT-207	Forms of Literature: Poetry	3
LIT-208	Forms of Literature: New Media	3
LIT-209	Forms of Literature: Film	3

	Adaptation	
(D) LIT-222	Literature & Culture: American Dreams	3
(D) LIT-224	Literature & Culture: Women and Work	3
LIT-225	Literature Themes: Beyond Bartleby	3
LIT-226	Literature Themes: Search for Identity	3
(D) LIT-227	Literature & Culture: World Poetry	3

Group 3 – Topics in Arts & Humanities

(D) CLS-180	American Pluralism	3
DRA-117	Film Topics	3
HUM-142	Popular Culture	3
MUS-209	Topics in Western Music History	3
(D) PHI-125	Native American Philosophies	3
(D) PHI-126	Chinese Philosophies	3
PHI-132	Philosophy of Education	3
PHI-150	Social and Political Philosophy	3
PHI-160	Environmental Ethics	3

Mathematics

Students earning an associate's degree must complete one college-level math course.

MAT-115	Mathematics and Society	3
MAT-117	Math for Elementary Teachers	3
MAT-120	College Algebra	3
MAT-136	Trigonometry & Analytic Geometry	5
MAT-138	College Algebra with Limits	4
MAT-140	Finite Math	3
MAT-149	Linear Algebra	3
MAT-150	Discrete Math	3
MAT-155	Statistical Ideas	3
MAT-157	Statistics	4
MAT-162	Business Statistics	4
MAT-165	Business Calculus	3
MAT-175	Calculus for Biological Sciences	4
MAT-210	Calculus I	4
MAT-216	Calculus II	4
MAT-219	Calculus III	4
MAT-227	Differential Equation with Laplace	4

Science

A.A. and A.S./C.O. degree seeking students select from Group A below. See an adviser for requirements specific to your degree.

BIO-104	Introductory Biology with Lab	3
BIO-112	General Biology I	4
BIO-113	General Biology II	4
BIO-124	Botany for Non-Majors	4
BIO-154	Human Biology	3
BIO-189	Microbes and Society	3
BIO-190	Introductory Biotechnology	3
BIO-195	Human Evolution	3
CHM-110	Intro to Chemistry	3
CHM-111	Intro to Chemistry Lab	1
CHM-132	Intro Organic & Biochemistry	4
CHM-165	General Chemistry I	4
CHM-175	General Chemistry II	4
ENV-115	Environmental Science	3
PHS-151	Intro to Astronomy	3
PHS-170	Physical Geology	3
PHS-171	Physical Geology Lab	1
PHS-175	Environmental Geology	3
PHS-176	Environmental Geology Lab	1
PHS-180	Evolution of the Earth	3
PHS-181	Evolution of the Earth Lab	1
PHY-120	Introductory Physics	3
PHY-162	College Physics I	4
PHY-172	College Physics II	4
PHY-212	Classical Physics I	5
PHY-222	Classical Physics II	5
SCI-120	Forensic Science	3
SCI-122	Forensic Science Lab	1

A.S. degree seeking students select from Group A listed above and from Group B listed below.

BIO-168	Human Anatomy & Physiology I w/ Lab	4
BIO-173	Human Anatomy & Physiology II w/ Lab	4
BIO-186	Microbiology	4
CHM-262	Organic Chemistry I	4.5
CHM-272	Organic Chemistry II	4.5
CHM-280	Quantitative Analysis	4

Social Science

Students seeking an A.A. degree need 3 courses, students seeking an A.S. degree need 2 courses.

CRJ-100	Introduction to Criminal Justice	3
CRJ-200	Criminology	3
CRJ-201	Juvenile Delinquency	3
(D) DSV-200	Exceptional Persons	3
ECN-120	Principles of Macroeconomics	3
ECN-130	Principles of Microeconomics	3
(D) ECN-210	Asian Economic Systems	3
EDU-240	Educational Psychology	3
GEO-115	Human Geography	3
(D) GEO-121	World Regional Geography	3
GEO-162	Geography of Iowa	3
HSV-110	Human Service Policy & Programs	3
MMS-101	Mass Media	3
POL-111	American National Government	3
POL-121	International Relations	3
(D) POL-125	Comparative Government & Politics	3
POL-150	Introduction to U.S. Foreign Policy	3
PRL-101	Paralegal Studies Orientation	3
PSY-111	Introduction to Psychology	3
PSY-121	Developmental Psychology	3
PSY-241	Abnormal Psychology	3

PSY-251	Social Psychology	3
SOC-110	Intro to Sociology	3
SOC-115	Social Problems	3
SOC-120	Marriage and Family	3
SOC-132	Sociology of Loss, Grieving & Growth	3
(D) SOC-265	Introduction to Lesbian, Gay, Bisexual & Transgender Studies	3
SOC-270	Social & Behavioral Research Methods	3
SOC-284	Sociology of the Environment	3
(D) SOC-200	Minority Group Relations	3

Diversity Courses Also Not Approved for Core

(Required for a student seeking an A.A. degree)

CLS-125	Language and Society	3
CRJ-202	Cultural Awareness-CJ Practitioners	3
ITP-130	Social Aspects of Deaf Culture	3
LIT-158	Literature of African Peoples	3

Course Descriptions

How to Read Course Descriptions

ENG-105 Composition I (3)
Develops expository writing with emphasis on organization, supporting details, style, vocabulary and library research skills. (3/0/0/0), Prereq: ENG-101 or qualifying placement score; Arts & Sciences Elective Code: A

Three-letter prefix (ENG) stands for the subject or department of study. (See list below.)

Credit value (3) of the course is indicated in semester hours.

(3/0/0/0) Indicates hours per week spent in **lecture, lab, clinic and internships** respectively.

Arts & Sciences Elective Code:
A = Transfer courses
B = Applied Science and Technology program courses
D = Developmental courses

Course Key

Course descriptions are listed according to the following prefixes:

ACC	Accounting
ADM	Administrative Assistant
ADN	Associate Degree Nursing
AGA	Ag - Agronomy
AGB	Ag - Farm Management
AGC	Ag - Comprehensive
AGE	Ag - Equine
AGF	Ag - Floral
AGH	Ag - Horticulture
AGM	Ag - Mechanics
AGN	Ag - Natural Resources/Forestry
AGP	Ag - Precision Ag
AGS	Ag - Animal Science
AGT	Ag - Technology
AGV	Ag - Vet Tech
ANT	Anthropology
APP	Apparel Merchandising
ARC	Architectural
ART	Art
ASL	American Sign Language
ATR	Automation Tech & Robotics
AUT	Automotive Technology
BCA	Business Computer Applications
BIO	Biology
BUS	Business
CAD	Computer Aided Drafting
CHM	Chemistry
CIS	Computer Information Systems
CLS	Cultural Studies
COM	Communication
CON	Construction
CRJ	Criminal Justice
CRR	Collision Repair/Refinishing
CSC	Computer Science
DAN	Dance
DEA	Dental Assistant
DEN	Dental
DHY	Dental Hygiene
DLT	Dental Lab Technology
DRA	Film and Theatre
DRF	Drafting
DSL	Diesel
DSV	Disability Services
ECE	Early Childhood Education
ECN	Economics
EDU	Education
EGR	Engineering
EGT	Engineering Technology
ELE	Electrical Technology
ELT	Electronics
EMS	Emergency Medical Services
END	Electroneurodiagnostic
ENG	English Composition
ENV	Environmental Science
ESI	Intensive English Second Lang.
EXS	Exercise Science
FIN	Finance
FIR	Fire Science
FLF	Foreign Language-French
FLG	Foreign Language-German
FLS	Foreign Language-Spanish
GEO	Geography
GIS	Geographic Information Systems
GRA	Graphic Communications
HCM	Hospitality, Culinary, Management
HCR	Heating & Air Conditioning
HIS	History
HIT	Health Information Technology
HSC	Health Sciences
HSV	Human Services
HUM	Humanities
IND	Industrial Technology
INT	Interior Design
ITP	Interpreting
LIT	Literature
MAP	Medical Assistant
MAS	Masonry
MAT	Mathematics
MFG	Manufacturing
MGT	Management
MIL	Military
MKT	Marketing
MMS	Mass Media Studies
MTR	Medical Transcription
MUA	Music - Applied
MUS	Music - General
NET	Computer Networking
OTA	Occupational Therapy Assistant
PEA	Physical Education Activity
PEC	Coaching Officiating
PEH	General Physical Ed. & Health
PEV	Intercollegiate Physical Ed.
PHI	Philosophy
PHR	Pharmacy Tech
PHS	Physical Science
PHY	Physics
PLU	Plumbing
PNN	Practical Nursing
POL	Political Science
PRL	Paralegal
PSY	Psychology
PTA	Physical Therapist Assistant
PWL	Powerline
RCP	Respiratory Therapist
RDG	Reading
REL	Religion
SCI	Science
SDV	Student Development
SOC	Sociology
SPC	Speech
SUR	Surgical Technology
UTL	Utilities
WAT	Water Environmental Tech
WEL	Welding
WTT	Wind Energy & Turbine Tech

ACC: Accounting

ACC-100 Accounting Concepts for Business Planning (1)
Introduces basic accounting concepts and procedures, including financial statement preparation. Focuses on incorporating financial projections into the design of pricing strategies and business planning. Credits: 1, Hours: (1/0/0/0), Prereq: CSC-110; Arts & Sciences Elective Code: B

ACC-111 Introduction to Accounting (3)
Introduces accounting principles for non-accounting majors. Includes analyzing, classifying and recording business transactions. Emphasizes understanding the complete accounting cycle and preparing financial statements, bank reconciliations and payroll. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

ACC-152 Financial Accounting (4)
Introduces the basic concepts and procedures of accounting including the accounting cycle, merchandise accounting, internal control, long-term and contingent liabilities, corporate accounting and the collection of data for external reporting. Includes the preparation and analysis of financial statements. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: A

ACC-156 Managerial Accounting (4)
Surveys the basic concepts and procedures of accounting to include managerial, manufacturing and cost accounting for decision making. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-152; Arts & Sciences Elective Code: A

ACC-160 Payroll Accounting (2)
Introduces concepts and procedures used in determining payroll taxes. Laws and regulations affecting payroll are presented. Taxes and current rates are reviewed so the student will understand withholding from the employee and the employer's taxes. Manual and computerized practical problems are solved by the student. Credits: 2, Hours: (2/0/0/0), Prereq: ACC-152; Arts & Sciences Elective Code: B

ACC-191 Financial Analysis (3)
Provides basic techniques for analyzing the flow of a business' funds and methods for selecting and interpreting financial ratios. Credits: 3, Hours: (3/0/0/0), Prereq: ACC-152; Arts & Sciences Elective Code: A

ACC-200 Professionalism: Accounting Club (1)
Develops and recognizes leadership and teamwork through a student-focused professional organization. Emphasizes leadership development and professional networking activities. Students participate in state and local conferences, perform community service and seek career skills. This course may be repeated for credit. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

ACC-222 Cost Accounting (4)
Relates the principles and methods of analyzing accounting data for planning and control, product costing and decision making. Emphasis on job orders, process and standard cost accounting systems, budgeting and cost-volume-profit analysis. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-156, MAT-140; Arts & Sciences Elective Code: A

ACC-231 Intermediate Accounting I (4)
Includes a review of accounting procedures and the reporting process. Provides an in-depth analysis of the asset and liability sections of the balance sheet. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-156, MAT-140; Arts & Sciences Elective Code: A; Comments: MAT-140 may also be taken as a corequisite

ACC-232 Intermediate Accounting II (4)
Emphasizes corporate accounting, incomplete records, price level accounting, the funds statement, pension accounting, leases and financial statement analysis. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-231, MAT-140; Arts & Sciences Elective Code: A

ACC-265 Income Tax Accounting (4)
Introduces the federal income tax law, its purpose and development and its significance for tax planning. Emphasis is placed on individual and business tax law with an introduction to corporations. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-152; Arts & Sciences Elective Code: A

ACC-311 Computer Accounting (3)
Enhances student learning by comparing the manual accounting cycle system with a professional accounting software. The course is project-based with an emphasis on accounting cycles and the management of accounting data. Students use a commercial accounting package with payroll and spreadsheet applications. Credits: 3, Hours: (2/2/0/0), Prereq: ACC-152, CSC-110; Arts & Sciences Elective Code: B

ACC-313 Accounting Applications (4)
Compares the manual accounting cycle system to professional accounting software. Introduces concepts and procedures used in determining payroll taxes, and laws and regulations affecting payroll. Emphasizes accounting cycles and the management of accounting data through student projects. Students use a commercial accounting package. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-152, CSC-110; Arts & Sciences Elective Code: B

ACC-362 Accounting Spreadsheets (4)
Addresses the use of spreadsheet software as a problem-solving tool for the accountant. This tool is used to develop models that can be used to analyze data, create what-if scenarios, and automate computations, sort and group data, and view data graphically. The topics include, but are not limited to, planning, building, testing and documenting worksheets. Special topics include, but are not limited to, functions, charts, solver, data management, multiple worksheets, data tables, integration with other applications and macros. Credits: 4, Hours: (4/0/0/0), Prereq: ACC-152, CSC-110; Arts & Sciences Elective Code: B

ACC-491 Accounting Capstone (3)
Brings together and develops further the various accounting concepts introduced in earlier course work. Demonstrates how the various components of an accounting system work together. This course is project-based with emphasis on evaluation and analysis of accounting reports. Credits: 3, Hours: (3/0/0/0), Prereq: ACC-231, ACC-265, ACC-313, ACC-362, MAT-140; Coreq: ACC-222, ACC-232; Arts & Sciences Elective Code: B

ACC-928 Independent Study (1-3)
Provides readings, training and basic research under the guidance of a faculty member. Frequently includes an extensive community service component. Credits: 1-3, Hours: (0/2-6/0/0), Arts & Sciences Elective Code: B; Comments: Permission of sponsoring faculty member

ACC-949 Special Topics (1-3)
Offers a learning experience using readings, case studies, group projects and basic research. Instruction related to current relevant topics in the accounting and business environment. Credits: 1-3, Hours: (0/2-6/0/0), Prereq: ACC-152; Arts & Sciences Elective Code: B

ADM: Administrative Assistant

ADM-105 Introduction to Keyboarding (1)
Provides instruction in alphabetic and numeric keyboarding and includes exercises designed to increase speed to 30 words per minute with five or fewer errors on five-minute timed writings. Includes instruction in the use of proofreaders' marks and how to create a business letter in block format using Microsoft Word. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

ADM-122 Document Formatting (2)
Presumes students already know the alphabetic and numeric keyboard. Instruction includes exercises designed to increase speed to 45 words per minute with five or fewer errors on five-minute timed writings. Includes instruction in creating standard business letters, interoffice memos, tables, simple reports and newsletters using Microsoft Word. Credits: 2, Hours: (1/2/0/0), Prereq: ADM-105; Arts & Sciences Elective Code: A

ADM-133 Business Math and Calculators (3)
Provides for the integration of business math concepts and formulas. Emphasizes current business math practices built on the foundation of mathematical problem solving. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-062; Arts & Sciences Elective Code: A

ADM-142 Desktop Publishing (3)
Allows students to create professional-quality documents, such as one-page bulletins or short newsletters, using desktop publishing software. The student will also integrate text, graphic and image files previously created with a variety of application software. Credits: 3, Hours: (2/2/0/0), Prereq: ADM-122 or BCA-135; Arts & Sciences Elective Code: B

ADM-154 Business Communication (3)
Develops skills and knowledge needed for effective verbal and written communication in the workplace environment. Focuses on creating business-related correspondence including emails, memos, letters and reports, preparing and giving oral presentations, and learning important practices in doing business with other cultures. Credits: 3, Hours: (3/0/0/0), Prereq: COM-710 and ADM-165, or ENG-105; Arts & Sciences Elective Code: B

ADM-163 Office Concepts and Procedures (3)
Provides for an understanding of the concepts, terminology, skills and procedures needed for employment in an office. This course covers such topics as telephone and teleconference techniques, travel arrangements, meetings, mail and shipping services, ethics and professionalism, office supplies and other basic office information. Credits: 3, Hours: (3/0/0/0), Prereq: COM-710 or ENG-105; Coreq: BCA-136, BCA-179, BCA-205; Arts & Sciences Elective Code: B

ADM-164 Administrative Office Applications (3)
Integrates the skills, knowledge and personal qualities necessary for an administrative assistant to perform the operational and supervisory functions for today's computerized office. Provides simulated office activities in a team environment using integrated software, problem-solving techniques and decision-making experiences with special emphasis on creativity, computer applications and professionalism. Credits: 3, Hours: (3/0/0/0), Prereq: ADM-163; Arts & Sciences Elective Code: A; Comments: This is a capstone course that utilizes software to complete a simulation. Teaching of the software is not done in this course.

ADM-165 Information Processing (3)
Develops and applies oral, written and listening communication skills using a variety of tools in an individualized environment. Students learn to use transcription and voice recognition equipment in order to make formatting decisions while improving listening skills. Student learning outcomes focus on English, proofreading, editing and producing mailable documents. Credits: 3, Hours: (3/0/0/0), Prereq: COM-710 or ENG-105; Coreq: BCA-136; Arts & Sciences Elective Code: B

ADM-176 Electronic Records System (3)
Create, collect, process, maintain, retrieve, use, store, disseminate and dispose of records using an electronic records system. Student use the Windows environment to store records according to ARMA (Association of Records Managers and Administrators, Inc.) alphabetic rules. Numeric, geographic, and subject filing rules are explored. Students research and present up-to-date material on retention, retrieval and transfer of records.

Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

ADM-187 Administrative Assistant Capstone (1)

Focuses on assembling artifacts highlighting student's learning while attending Kirkwood Community College. Results in the creation of electronic and paper portfolios, showcasing student's competency levels for each of the Administrative Assistant program outcomes. Builds student's employment conversation skills. Conversation skills and the e-portfolio are featured during the final exam presentation. Credits: 1, Hours: (1/0/0/0), Prereq: ADM-164, BCA-138; Coreq: BUS-290, BUS-932; Arts & Sciences Elective Code: B

ADM-257 Professionalism in the Workplace (2)
This course covers the various aspects of professionalism. Students complete five units of course work that focus on professional growth, professional organizations, success, professional image and research. Students create a professional growth plan, determine the value of professional organizations, develop success attributes, hone a professional image and research various career options. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

ADM-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

ADN: Associate Degree Nursing

ADN-105 Introduction to Associate Degree Nursing (1)
Examines the role of the associate degree registered nurse. Concepts of nursing process, wellness, community and management are introduced. Credits: 1, Hours: (1/0/0/0), Prereq: PNN-533, PNN-732, PSY-111, PSY-121, SPC-101; Coreq: ADN-577, ADN-723; Arts & Sciences Elective Code: B

ADN-149 Transition to Associate Degree Nursing (2)
Emphasizes the use of the nursing process as a framework to provide care and perform focused assessments of patients in a clinical setting. Encourages students to apply knowledge, psychomotor and affective skills to effectively care for older adults in long-term care settings. Requires use of evidence-based practice to evaluate and revise individualized care plans. Credits: 2, Hours: (1.5/1/0/0), Prereq: PNN-129, PNN-436, PNN-702; Arts & Sciences Elective Code: B

ADN-160 Nursing Care of Specific Populations (2)
Focuses on the care of high risk obstetric, pediatric and mental health patients. Includes growth and development, ethical/legal considerations and family-centered care. Incorporates inpatient evidence-based-practice to promote safety, clinical judgment and information literacy. Credits: 2, Hours: (2/0/0/0), Prereq: PNN-129, PNN-436, PNN-702; Arts & Sciences Elective Code: B

ADN-170 Concepts of Nursing (4)
Focuses on the care of adult patients who require medical and/or surgical intervention. Integrates patient-centered care, cultural sensitivity, pharmacology, health promotion and education, safe practice, evidence based practice, interdisciplinary collaboration and professionalism throughout the course. Credits: 4, Hours: (4/0/0/0), Prereq: ADN-160, ADN-730; Arts & Sciences Elective Code: B

ADN-180 Advanced Concepts of Nursing (5)
Focuses on advanced nursing care of patients and families with complex multi-system health problems, leadership, management and nursing care in the community. Emphasizes time management and organizational skills, while managing the care of multiple patients and collaborating with the interdisciplinary team in the acute and community settings. Credits: 5, Hours: (5/0/0/0), Prereq: ADN-170, ADN-740; Arts & Sciences Elective Code: B

ADM-187 Administrative Assistant Capstone (1)
Focuses on assembling artifacts highlighting student's learning while attending Kirkwood Community College. Results in the creation of electronic and paper portfolios, showcasing student's competency levels for each of the Administrative Assistant program outcomes. Builds student's employment conversation skills. Conversation skills and the e-portfolio are featured during the final exam presentation. Credits: 1, Hours: (1/0/0/0), Prereq: ADM-164, BCA-138; Coreq: BUS-290, BUS-932; Arts & Sciences Elective Code: B

ADN-577 Associate Degree Nursing I (3.5)
Emphasizes the utilization of the nursing process to promote adaptation in clients with physiological problems. Concepts studied include acid/base balance, fluid and electrolytes, shock, and biological defenses. Selected disease states present in the adult population assist in the application of these concepts. The areas of pathophysiology, nutrition and pharmacology are integrated relative to the client problems. Advanced skills are practiced in a supervised lab setting. Credits: 3.5, Hours: (3/1/0/0), Prereq: PNN-533, PNN-732, PSY-111, PSY-121, SPC-101; Coreq: ADN-105, ADN-723; Arts & Sciences Elective Code: B

ADN-653 Associate Degree Nursing II (3)
Emphasizes the utilization of the nursing process to promote adaptation in adults, families and communities. Selected cardiovascular and neurological disease states are studied. Advanced psychosocial concepts and illnesses are studied in the context of the family and the community. The areas of pathophysiology, nutrition and pharmacology are integrated relative to the client problems. Credits: 3, Hours: (3/0/0/0), Prereq: ADN-105, ADN-577, ADN-723; Coreq: ADN-724; Arts & Sciences Elective Code: B

ADN-654 Associate Degree Nursing III (4)
Emphasizes the utilization of the nursing process to promote adaptation in adult, pediatric and obstetrical clients with acute multi-system problems. Registered nurse roles related to community and management are studied. The areas of pathophysiology, nutrition and pharmacology are integrated relative to the client problems. Credits: 4, Hours: (3/2/0/0), Prereq: ADN-653, ADN-724; Coreq: ADN-725; Arts & Sciences Elective Code: B

ADN-723 Associate Degree Nursing Clinical I (3)
Focuses on the application of knowledge, psychomotor and affective skills to perform the role of provider of care. Emphasis is on making advanced assessments and performing nursing skills associated with acute inpatient settings. Concepts related to nutrition, pharmacology, pathophysiology and care planning are applied. Credits: 3, Hours: (0/0/9/0), Prereq: PNN-732; Coreq: ADN-105, ADN-577; Arts & Sciences Elective Code: B

ADN-724 Associate Degree Nursing Clinical II (3)
Focuses on the application of knowledge, psychomotor and affective skills to perform the role of provider of care. Emphasis is on making advanced physiological and psychosocial assessments and planning individualized care in acute inpatient settings. Concepts related to nutrition, pharmacology, pathophysiology and care planning are applied. Credits: 3, Hours: (0/0/9/0), Prereq: ADN-105, ADN-577, ADN-723; Coreq: ADN-653; Arts & Sciences Elective Code: B

ADN-725 Associate Degree Nursing Clinical III (4)
Focuses on the application of knowledge, psychomotor and affective skills to perform the role of provider of care. Emphasis is on developing, prioritizing and evaluating individualized care of clients with complex disease states in acute care and community settings. Concepts related to nutrition, pharmacology, pathophysiology and care planning are applied. Credits: 4, Hours: (0/0/12/0), Prereq: ADN-653, ADN-724, BIO-186; Coreq: ADN-654; Arts & Sciences Elective Code: B

ADN-730 Nursing Care of Specific Populations Clinic (2)
Applies clinical concepts in the acute and community mental health settings. Includes crisis intervention, therapeutic communication, anger management and coping skills related to severe and persistent mental illness. Applies clinical concepts for high-risk patients and families occur in the acute obstetric and pediatric clinic and simulation environments. Credits: 2, Hours: (0/0/6/0), Prereq: PNN-129, PNN-436, PNN-702; Arts & Sciences Elective Code: B

ADN-740 Concepts of Nursing Clinic (3)
Provides an opportunity to apply theoretical concepts and implement safe patient care to adult patients and families that require medical and/or surgical intervention in a variety of settings. Applies the nursing process, advanced assessment skills, family-centered care, interdisciplinary collaboration, professionalism, cultural sensitivity, use of informatics and evidence-based practice

to promote clinical reasoning and safe practice. Credits: 3, Hours: (0/0/9/0), Prereq: ADN-160, ADN-730; Arts & Sciences Elective Code: B

ADN-750 Advanced Concepts of Nursing Clinic (3.5)
Focuses on the advanced nursing care of patients, families and communities with complex multi-system health problems in the acute and community settings. Provides opportunities to experience theoretical concepts and implement safe patient care to adult patients, families and communities with complex health alterations that require medical and/or surgical intervention in a variety of clinical settings. Emphasizes time management and organizational skills. Credits: 3.5, Hours: (0/0/10.5/0), Prereq: ADN-170, ADN-740; Arts & Sciences Elective Code: B

ADN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Requires approval of supervising professor and dean. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

ADN-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGA: AG-Agronomy

AGA-114 Principles of Agronomy (3)
Presents instruction in crop plant classification, use and identification. Also covers cropping systems, tillage methods, planting and harvesting methods, and crop growth patterns. A balance of theoretical and practical crop science. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGA-154 Fundamentals of Soil Science (3)
Studies physical and chemical properties of soil, soil formation and classification. Also studies the essential plant nutrients and their availability in soil. Balances theoretical and practical aspects of soil fertility and includes soil testing and fertilizer products. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

AGA-165 Agricultural Fertilizers and Chemicals (3)
Reviews fertility concepts and relates them to fertilizers and fertilizer application methods. Includes soil sampling methods, analyzing a soil test report, choosing application methods and calculating fertilizer costs. Studies herbicides and insecticides used on Midwestern farms. Topics include chemical safety, selection and application methods. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGA-170 Fertilizer Management (3)
Covers principles of nutrient management as they relate to soil, plants, fertilizer practices, management systems and the environment. Discusses manure management plans, handling laws and how they impact farming operations. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

AGA-209 Row Crop Production (3)
Studies and compares different types of tillage methods, seed varieties, fertilizer programs, diseases and chemical application, as well as weed control and new harvest methods used in modern row crop production. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGA-217 Field Crop Harvesting and Drying (3)
Introduces the basics, theory and operation of combines and choppers with actual in-the-field adjustment and operation of machines. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGA-283 Pesticide Application Certific (2)
Prepares students for the Iowa Commercial Applicators or Iowa Private Applicators examinations. Studies agricultural chemicals using the Iowa Core Manual, which emphasizes proper application techniques, safety and regulatory compliance. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGA-376 Integrated Pest Management (3)
Develops observation and identifies symptoms of insect damage, weed and herbicide problems. Utilizes the concept of integrated pest management and economic threshold in recommending control methods. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGA-381 Crop Scouting (3)
Focuses on identification of pest problems in crops and on developing an integrated pest management program. Students learn to utilize economic thresholds in recommending control methods. Students also learn to prevent potential fertility, pest and environmental problems with crop production practices. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGA-880 Forage Crop Management (3)
Covers production and management of forage crops in pasture and field scenarios. Emphasizes optimizing yield, quality and stand persistence in grazing, hay and silage systems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Requires approval of supervising professor and dean. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

AGA-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGA-948 Special Projects (1-3)
Includes an agreed-to development plan for an applied problem solution. Students and instructor meet regularly for discussion, observation and evaluation of the project development. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGB: AG-Farm Management

AGB-101 Agricultural Economics (3)
Principles of production, supply and demand applied to economic problems of agriculture and agricultural-related industries, and to decisions in farm management, marketing, foreign trade and agricultural policy. Reviews the principles of diminishing returns, marginal costs, opportunity cost, substitution, and the concept of risk and uncertainty. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGB-133 Introduction to Ag Business (3)
Focuses on entrepreneurship in agribusiness. Includes the study of marketing, budgeting, financial statements, purchasing, business structure, customer relations and inventory control. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGB-138 Principles of Agribusiness (3)
Emphasis on markets, marketing institutions, marketing functions and problems in moving goods or services from the agricultural producer to the consumer. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGB-194 Beginning Sales (2)
Covers the fundamentals and techniques of successful selling, developing sales personality and the selling cycle. Practical application through sales presentation of the principles of selling using videotapes as a self-evaluation device. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGB-235 Introduction to Agriculture Markets (3)
Studies the concepts, institutions, procedures, methods and problems in moving goods or services from the producer to the consumer. Cash marketing, forward contracting, futures marketing and options marketing are taught. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGB-251 Agribusiness Procedures (3)
Reviews terminology used in agribusiness, the handling of money from sales, inventory control, customer credit control, business money management and basic double-entry bookkeeping. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGB-300 Farm Record Analysis (1)
Applies farm accounting, economic principles and budgeting to the organization and management of a farm business. Includes risk and uncertainty, precautions and adjustments, size of business, capital acquisition and control, as well as crop, livestock, machinery and labor management considerations. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

AGB-321 Agriculture Procedures and Safety (2)
Prepares agribusiness students to master mechanical skills for their employment internship in agribusiness. Students learn how to work on fertilizer, chemical and feed equipment. Students will be assisted in identifying and obtaining required licenses and permits for internship. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGB-322 Buildings and Equipment (2)
Prepares agribusiness students to master mechanical skills for their employment internship in agribusiness. Students learn how to work on fertilizer, chemical and feed equipment. Students will be assisted in identifying and obtaining required licenses and permits for internship. Credits: 2, Hours: (0/4/0/0), Arts & Sciences Elective Code: B

AGB-325 Agricultural Construction and Repair (3)
Deals with knowledge and skill development in general repair and construction with regard to a general stable, farm or livestock production system. Deals with practical aspects of concrete, carpentry, plumbing and electricity. When possible, real laboratory situations are used to present of this information. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGB-328 Farm and Family Financial Management (2)
Designed to instruct producers in financial and production management. Deals with goal setting, balance sheets, cash flow, enterprise analysis and risk level. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGB-330 Farm Business Management (3)
Applies farm accounting, economic principles and budgeting to the organization and management of a farm business. Includes risk and uncertainty, precautions and adjustments, size of business, capital acquisition and control, as well as crop, livestock, machinery and labor management considerations. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

AGB-331 Entrepreneurship in Agriculture (3)

Covers the organization, research and planning necessary to be a successful entrepreneur in the agriculture and food sectors. Focuses on opportunity recognition and assessment, and business plan development, which includes research, organization, location, competition, production of the product or service, marketing, finance, staffing, monitoring and measuring for both private and social enterprises. Emphasizes financial needs and projection. Credits: 3, Hours: (3/0/0/0), Prereq: none; Coreq: none; Arts & Sciences Elective Code: B

AGB-332 Agricultural Advertising/Merchandising (3)
Covers planning, creation and use of advertising related to agricultural economy and marketing of agricultural products. Purposes of advertising and displaying of merchandise, methods of appeal, copy problems, layout, design problems and selection of media. Practical applications will be demonstrated. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGB-336 Agricultural Selling (3)
Covers the fundamentals and techniques of successful selling, developing sales personality and the selling cycle. Practical application through sales presentation of the principles of selling using videotape as a self-evaluation device. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGB-466 Agricultural Finance (3)
Emphasizes general principles associated with the evaluation of management and the use of capital in agricultural business. Application of effective use of credit and credit instruments, and description and analysis of agricultural credit institutions and agencies will be taught. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGB-470 Farm Records, Accounts, Analysis (3)
Provides knowledge of methods of keeping farm records and accounts for farm and tax management uses. Students complete a record keeping project and prepare a cash flow budget, income statement and balance sheet. Uses double-entry procedures along with a farm accounting computer program. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

AGB-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Requires approval of supervising professor and dean. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

AGB-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGC: AG-Comprehensive

AGC-101 Composting 101 (1)
Provides an understanding of the principles of composting and practical management of a compost pile. Addresses the microbial system functions that allow farm feedstocks to be used to obtain desired results. Involves hands-on experience in how to solve problems and maintain an environmentally and economically-sound compost system. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGC-103 Ag Computer (3)
Studies the use of personal microcomputers for processing firm and financial records. Emphasizes word processing, database management, spreadsheets, PowerPoint presentations and Internet use. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGC-104 Applied Computers in Agriculture (2)
Studies the use of personal microcomputers for processing firm and financial records. Emphasizes word processing, database management, spreadsheets, PowerPoint presentations and Internet use. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGC-115 Ag Career Orientation (1)
Provides students with an overview of their chosen career field. Students identify areas of interest within the industry and make an educational plan to attain their career goals. Includes activities to assist students in adjusting to college life and exploring Kirkwood opportunities. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGC-130 Mathematics I - Agriculture (3)
Provides the student with math skills relating to agricultural economics, agribusiness, animal science, agronomy and agricultural mechanics. Applies the basic math functions and basic algebra to practical agricultural situations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGC-160 Introduction to Technical Chemistry (4)
Provides a background in general chemistry that enables students to succeed in clinical chemistry. The hands-on laboratory exercises allow students to learn physical chemical properties and work more efficiently in an industry laboratory. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: B

AGC-210 Employment Seminar (1)
Assists the student in planning and knowing the rules in employment internship. Includes current topics on resume writing, interviewing techniques and other job-hunting skills. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGC-313 Leadership in Agriculture (1)
Develops skills in using parliamentary procedure, business meeting agendas, techniques of delegation, applied communication skills, organization structure and job-seeking skills. Includes determining cooperative activities, organization funding, committee functions and leading discussion groups. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGC-314 Leadership in Agriculture (2)
Develops skills in using parliamentary procedure, business meeting agendas, techniques of delegation, applied communication skills, organization structure and job-seeking skills. Includes determining cooperative activities, organization funding, committee functions and leading discussion groups. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGC-420 Issues in Agriculture (3)
Studies the policies and issues that affect American agriculture and rural society. Explores the methods of accessing those who form agricultural policy and economic/social systems. Focuses on agricultural/environmental laws, regulations and technologies driving current policymaking, and how they impact stakeholders in a rapidly changing agricultural economy. Prepares students to think critically within today's global economy and changing workforce. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGC-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires completion of an honors project learning contract. Requires approval of supervising professor

and dean. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGC-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGC-932 Internship (2-6)
Provides on-the-job training in an approved business establishment. Valuable learning experiences are structured by the program coordinator and the training sponsor. Credits: 2-6, Hours: (0/0/0/8-24), Arts & Sciences Elective Code: B; Comments: Program coordinator approval

AGE: AG-Equine

AGE-104 Total Fitness for the Rider (1)
Students learn basic principles and techniques in strength training and conditioning to help performance and communication with the horse. Critical elements of equestrian fitness to be covered include basic fitness program design, nutrition, various lifting techniques or modalities, flexibility, and cardiovascular fitness. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

AGE-107 Trail Riding (1-2)
Introduces factors that affect a horse on the trail such as laws, ride preparation, equipment, trail etiquette, application of reins, seat and anticipation. Credits: 1-2, Hours: (0.5-1/1-2/0/0), Prereq: AGE-109 or AGE-110; Arts & Sciences Elective Code: B; Comments: Permission of instructor and dean.

AGE-108 Horsemanship I (3)
Introduction to the principles of horsemanship stressing horse care before and after riding, the initial seat position, elements of the seat, posting trot, coordination of the aids, turns and leads of the canter, as well as anatomical, physiological and psychological implications involved in riding. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGE-109 Horsemanship II (3)
Further development of the balanced seat, good hands and correct form at the natural gaits of the horse. Includes application of the principles of basic ground work. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGE-110 Introduction to Basic Riding (2)
Provides applied instruction in developing the western rider and horse. Balanced-seat approach stressed; covers horse handling, grooming, haltering, leading, saddling, bridling and fundamentals of walk, jog and beginning lope. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGE-111 Advanced Western Horsemanship (3)
Instruction in developing western rider and horse. Balanced seat approach is stressed with rider's role in controlling action and movement in stock horse application. Credits: 3, Hours: (1/4/0/0), Prereq: AGE-110; Arts & Sciences Elective Code: B

AGE-112 Advanced Horsemanship Techniques (2)
Provides basic fundamental points of riding by the execution of a horse of complex maneuvers in response to barely perceptible movements of a rider's hands, legs and weight. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B; Comments: Previous riding class or permission of instructor.

AGE-121 Horse Evaluation (3)
Provides information on horse conformation. Students can apply knowledge and develop their potential in judging horses by comparatively analyzing a class of horses. Students will cover anatomy and skeletal structure. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGE-130 Horse Nutrition (3)
Discusses essential nutrients and their role in an animal's metabolism. Covers unique digestive physiology and anatomy, nutrient excess and deficiency symptoms, and includes lab exercises. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGE-161 Instructing Horsemanship (3)
Students learn an understanding of running a riding lesson program, what considerations need to be taken, horse selection and riding ability levels. Credits: 3, Hours: (2/2/0/0), Prereq: AGE-108 or AGE-110; Arts & Sciences Elective Code: B

AGE-168 Horse Breeds Selection (2)
Recognizes the major and minor horse breeds and their uses. Students identify the different breeds as to their breed characteristics, origin, capabilities, type, conformation and history of the breed from the beginning to the present. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGE-169 Equine Fitting and Grooming (3)
Applies actual feeding and care of the college's horses under a practical management situation. Certain competency tests must be performed related to an efficient stable master schedule and the implementation of a schedule and the tasks related to such. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGE-170 Health and Performance Management of the Horse (3)
Discusses and identifies the conformation of the horse, the respiratory, digestive, nervous and circulatory systems, plus skeletal and muscle structure. Relates causes and prevention of economically important horse diseases. Current state and federal regulations are also described. This course is generally taught by a veterinarian. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGE-172 Equine Ground Work (2)
Applies actual care and feeding of the college's horses under a practical management situation. Competency tests in both working with horses on the ground and presentation of halter classes are performed. Credits: 2, Hours: (.5/3/0/0), Arts & Sciences Elective Code: B

AGE-185 Equine Facilities Maintenance and Mechanics (3)
Establishes basic understanding and manipulative skills related to facility maintenance. Deals with the fundamentals of farm carpentry, fences, concrete, buildings, stalls, plumbing, electricity and general upkeep. Competency base is stressed. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGE-202 Equine Genetics and Breeding Management (3)
Covers the physiology and anatomy of the mare and stallion. Includes breeding management of both mare and stallion. Reviews common fertility problems in both. Discusses and identifies causes of absorption and abortion in the mare. Identifies common techniques used in equine reproduction, including artificial insemination. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGE-206 Advanced Breeding Management (2)
Introduces advanced reproductive techniques using state-of-the-art equipment. Discusses diagnostic testing. Students get experience extending, cooling, freezing semen and evaluating semen. Students learn to understand and read uterine biopsy results, including how to prepare specimens for uterine cytology and microbiology. Credits: 2, Hours: (1/2/0/0), Prereq: AGE-205; Arts & Sciences Elective Code: B

AGE-209 Equine Anatomy & Physiology (2)
Beginning anatomy and physiology with veterinary equine clinical emphasis. Provides the basis for a study of conformation, production and pathological process of diseases in horses. Credits: 2, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

AGE-211 Equine Business Management I (3)
Applies accounting, economic principles and budgeting to the organization and management of an equine business. Includes risk and uncertainty, precautions and adjustments, business size, capital acquisition and control, as well as herd, pasture, machinery and labor management considerations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGE-212 Equine Business Management II (3)
Applies the necessary steps in becoming a horse business owner from investing, licenses and tax benefits. Other areas covered include marketing, insurance, buying and selling, employees and independent contractors, pedigree or performance records, and IRS information. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGE-213 Management of the Racing Thoroughbred (1)
Identifies the techniques of managing the thoroughbred racehorse. Describes the basic care of the thoroughbred including feeding, veterinary, farrier and conditioning practices. Identifies special techniques, which include taking temperature, pulse, respiration, X-rays, blood counts and pre-race preparation. Interpretation and analysis of thoroughbred pedigrees and racetrack operations are taught. Some course time may be spent at a racetrack. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

AGE-230 Training I (3)
Introduces initial horse training principles and techniques. Emphasizes natural horsemanship theory and practice. Credits: 3, Hours: (1/4/0/0), Prereq: AGE-109, AGE-172; Arts & Sciences Elec-

tive Code: B; Comments: Grades in prerequisite courses must be B or higher

AGE-231 Training II (3)
Builds on the principles, theories and practical experiences learned in Training I. Covers early training, handling, lunging, and horsemanship, with an emphasis on equine psychology. Presents proper methodology for various bits and equipment. Credits: 3, Hours: (1/4/0/0), Prereq: AGE-230; Arts & Sciences Elective Code: B

AGE-232 Training III (2)
Provides instruction in management of specialized training of various types of horses. Emphasis is on the theory and practice of training principles, horsemanship skills and methods, and how they are executed. Credits: 2, Hours: (1/2/0/0), Prereq: AGE-230, AGE-231; Arts & Sciences Elective Code: B

AGE-240 Fundamentals of Training (3)
Deals in basic training fundamentals on an individual basis. This is an open lab course. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGE-241 Colt Starting (3)
Designed to teach students the fundamental principles of training the young horse through practical application. Credits: 3, Hours: (1/4/0/0), Prereq: AGE-230 or AGE-231 or AGE-232; Arts & Sciences Elective Code: B

AGE-246 Long Lining and Driving Techniques (3)
Improves the basic techniques of long reining and driving. Includes tack familiarization, rein use, long-lining, preliminaries to harnessing and driving. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGE-252 Horse Shows (4)
Identifies and applies necessary requirements to prepare and show a horse, and includes instruction and participation in setting up and conducting a horse show. Students may actually show in available horse shows. Credits: 4, Hours: (1/6/0/0), Arts & Sciences Elective Code: B

AGE-260 Introduction to Farrier Science (1)
Presents basic hoof preparation and trimming concepts. Students study current hoof status (before and after), foot and leg problems, and methods of correction. Stresses applied lab technique, with forge work available. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

AGE-261 Legs and Hoof (3)
Provides instruction on the care and condition of horses' legs and feet, and covers basic concepts of correct preparation and shoeing of a horse, foot unsoundness, leg problems, and methods of correction by proper trimming and shoeing. Includes the examination of stance, gaits, unsoundness, breed requirements, methods of restraint, and types of corrective shoes and how they function. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGE-270 Equestrian Drill Team (2)
Riders and horses are developed into a working unit of two or more drill teams. Western balance seat is stressed with work on maneuvers, routine and patterns. Horsemanship is taught to improve communication between horse and rider. Historical study of where and how the maneuvers were used in cavalry units of Iowa is included. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGE-290 Horse Projects (1-3)
A preplanned schedule for discussion, observation and evaluation of the horse project is developed. Covers athletic performance of the horse, training and environmental effects, and use of records. Management of facilities and other horse projects are stressed. Includes an agreed-to development plan for an applied problem solution. Credits: 1, Hours: (1/0/0/0), Prereq: AGE-230; Arts & Sciences Elective Code: B

AGE-295 Western Style Training Project (3)
Introduces Western pleasure training fundamentals, techniques, equipment (bits, reins and training aids) and horse conformation. Emphasizes correct movement of horse and rider, as well as learning the meaning of "forward motion." Riders develop individual goals for themselves and their horses. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGE-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Requires approval of supervising professor and dean. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

AGE-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGF: AG-Floral

AGF-120 Floral Plant Identification and Care I (2)
Studies identification, care and handling requirements of cut flowers and foliages and green and blooming plants commonly sold in retail flower shops. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGF-122 Floral Plant Identification and Care II (2)
Studies the common and botanical names and growth requirements of green, blooming and bedding plants commonly sold in retail flower shops. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGF-130 Floral Careers Computer Literacy (2)
Introduces students to applications for computers in the floral industry and computer use for assignments in the Floral Careers program. Topics include operating systems, MS Word, hardware and software, terminology, functions, applications, Windows, spreadsheets and Internet. Designed for the student with little or no computer experience. Self-paced. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGF-135 Floral Careers Plant Propagation (2)
Studies environmental factors needed to produce optimum growth requirements of green and bedding plants in lecture and laboratory settings. Introduces techniques used in reproducing plants through sexual and asexual methods. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGF-140 Floral Design I (3)
Introduces basic geometric design of fresh arrangements, corsages, Christmas arrangements, funeral flowers, potted plants and green planters. Includes use of tools and supplies. Credits: 3, Hours: (1/4/0/0), Coreq: AGF-160; Arts & Sciences Elective Code: B

AGF-142 Floral Design II (3)
Studies advanced floral design of fresh flowers, funeral, memorial and wedding arrangements. Credits: 3, Hours: (1/4/0/0), Prereq: AGF-140; Coreq: AGF-162; Arts & Sciences Elective Code: B

AGF-144 Floral Design III (3)
Involves advanced all-occasion and wedding designing, including table setting and copy work. Credits: 3, Hours: (1/4/0/0), Prereq: AGF-142; Coreq: AGF-164; Arts & Sciences Elective Code: B

AGF-146 Floral Design III B (1)
Promotes student's individual style through introduction of current design trends and floral industry influences. Credits: 1, Hours: (0/2/0/0), Prereq: AGF-144; Arts & Sciences Elective Code: B

AGF-150 Retail Flower Shop Operation I (3)
Introduces the florist business, floral product sales, general selling and efficient shop layout. Studies the processing of floral orders, terminology and telephone procedures. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGF-152 Retail Flower Shop Operation II (4)
Studies the aspects of the floral business involving funeral and wedding arrangements. Sales and etiquette of these floral products is included. Credits: 4, Hours: (4/0/0/0), Prereq: AGF-150; Arts & Sciences Elective Code: B

AGF-154 Retail Flower Shop Operation III (2)
Analyzes the floral business as a center of employment, personnel policies, shop management and operations. Credits: 2, Hours: (2/0/0/0), Prereq: AGF-150, AGF-152; Arts & Sciences Elective Code: B

AGF-160 Event Planning I (1)
Introduces the career of an event planner. Includes characteristics of an event planner, organizing the business, marketing and networking. Students plan, produce and successfully execute special events. Credits: 1, Hours: (.5/1/0/0), Coreq: AGF-140; Arts & Sciences Elective Code: B

AGF-162 Event Planning II (1)
Emphasizes instruction and practical experience in many areas of event planning, with major emphasis on wedding planning and corporate events. Students plan, produce and successfully execute special events. Credits: 1, Hours: (.5/1/0/0), Prereq: AGF-160; Coreq: AGF-142; Arts & Sciences Elective Code: B

AGF-164 Event Planning III (3)
Emphasizes instruction and practical experience in event planning, including event planning management, contract negotiation, visual presentation, and marketing and advertising special events. Students plan, produce and successfully execute special events. Credits: 3, Hours: (2/2/0/0), Prereq: AGF-162; Coreq: AGF-144; Arts & Sciences Elective Code: B

AGF-300 Design Show Seminar (2)
Introduces students to current technical information used for problem solving in the floral industry. Special emphasis is devoted to planning and conducting the annual floral design show. Credits: 2, Hours: (2/0/0/0), Coreq: AGF-144; Arts & Sciences Elective Code: B

AGF-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Requires approval of supervising professor and dean. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

AGF-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGH: AG-Horticulture

AGH-102 Horticulture Math (3)
Reviews basic math calculations including math operations, fractions, decimals, introductory algebra and geometry. Relates math problems to horticulture applications. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGH-106 Introduction to Horticulture (3)
Introduces students to basic horticulture. Includes plant anatomy and physiology, plant classification and identification, and basic plant care. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-110 Success in Horticulture (1)
Acquaints students with critical issues relevant to horticulture, and provides information, skills and opportunities to be successful in the program, as well as their chosen career. Encourages students to stay engaged in their educational experience, both in and outside the classroom. This class is a source for both personal and academic growth, where students can develop lasting relationships and acquire skills to help them in making difficult choices. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGH-112 Introduction to Turfgrass Management (3)
Examines the culture of turf with an emphasis placed on establishments, turf varieties, and pest identification and control. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-120 Herbaceous Plant Materials (3)
Studies the identification and cultural requirements of approximately 40 annual and 40 herbaceous perennial plants. Includes bed establishment and care. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-123 Woody Plant Materials (3)
Develops skills in the identification, landscape use and cultural requirements of 80 varieties of deciduous trees and shrubs native to Iowa, as well as conifers used in windbreak and wildlife plantings. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-127 Ornamental Plant Materials (3)
Studies the identification, landscape use and cultural requirements of 80 ornamental trees, shrubs and vines. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-123; Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-131 Greenhouse Management (3)
Studies growing techniques used in commercial greenhouse plant production. Involves the design of greenhouses, their environmental control systems and cultural practices. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student.

AGH-141 Equipment Operations (3)
Introduces the student to basic equipment maintenance, operation and troubleshooting. Provides a working knowledge of equipment used in the horticulture industry. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-144 Landscape Construction and Design (3)
Involves the construction of landscape paving, concrete, retaining walls, basic wood construction, basic electrical and plumbing. Also covered are calculations necessary to order materials and bid procedures. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-152 Landscape Design Techniques (3)
Provides information and practice in basic graphic communication and introductory landscape design. Topics covered include use of scales, basic drafting, landscape symbols, design process, master planning, design with plant material and cost estimating. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-156 Landscape Design II (3)
Expands graphic communication and landscape design skills. Topics include freehand plan graphics, quick sketching, perspective and color drawing, landscape master planning, advanced plant design, amenity design, commercial layout. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-152; Arts & Sciences Elective Code: B; Comments: Second-year student.

AGH-158 Computer Applications for the Landscape Industry (2)
Introduces students to software used in the landscape, nursery, garden center fields. Students will learn new applications of Microsoft Office programs with an emphasis on marketing, inventory control, and customer relations. Some design software is also used including both two-dimensional (plan view) designing and photo imagery. Credits: 2, Hours: (1/2/0/0), Prereq: AGH-152; Arts & Sciences Elective Code: B; Comments: Demonstrated computer competence

AGH-163 Irrigation Design (2)
Covers water basics, pressure considerations, design and layout of irrigation systems for home and commercial use. Credits: 2, Hours: (1/2/0/0), Prereq: AGH-165; Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-165 Irrigation Installation and Repair (2)
Develops skills in the areas of irrigation system installation and repair. Topics covered include trenching and installation of irrigation pipe, heads, valves, and controls; system troubleshooting; and minor system repair. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student.

AGH-190 Interior Plantscape (3)
This course surveys 60 to 70 tropical green plants used in the interior plant industry. Interior design, installation and maintenance are also taught. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-200 Landscape Estimating and Bidding (2)
Focuses on the fundamentals of creating a landscape project estimate. Includes material take-offs, plant pricing, labor rates, measuring, reading landscape plans and math calculations. Credits: 2, Hours: (2/0/0/0), Prereq: AGH-102; Arts & Sciences Elective Code: B

AGH-211 Advanced Turfgrass Management (3)
Presents management techniques used in high-maintenance turf areas. Students receive advanced instruction in fertilization, pesticides, etc. Credits: 3, Hours: (3/0/0/0), Prereq: AGH-112; Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-220 Plant Identification Suite I (3)
Studies the identification and use of a set of annual, herbaceous perennial and woody ornamental shrubs and trees currently used in Midwestern landscape horticulture. Includes plant identification using botanical nomenclature, specific cultural requirements and how each is used in landscape design. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-233 Plant Propagation I (3)
Introduces students to techniques used in reproducing plants through sexual and asexual methods. Seedlings, vegetative cuttings, grafts and buddings are practiced in the laboratory. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-236 Plant Material Maintenance (3)
Studies pruning, fertilizing, staking and other maintenance practices utilized in tree and shrub care. Emphasis is placed on proper planting and transplanting procedures. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-238 Soil and Water Conservation (3)
Studies the different components of soil, soil forming factors, soil erosion and soil conservation. Introduces the student to surveying techniques and use of soil survey reports. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGH-240 Plant Identification Suite II (3)
Studies the identification and use of a set of annual, herbaceous perennial, and woody ornamental shrubs and trees currently used in Midwestern landscape horticulture. Includes the identification of plants using botanical nomenclature, the specific cultural requirements of each plant and how the plant can be used in landscape design. Second of a two-course sequence. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-220; Arts & Sciences Elective Code: B

AGH-253 Insects and Diseases (3)
Identifies common insects and diseases of horticulture crops and plant material. Control measures are discussed including chemical controls and integrated pest management. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGH-262 Fruit and Vegetable Science (3)
Introduces the student to the production of Midwestern fruit and vegetables with an emphasis on cultural practices, variety selections and storage. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGH-275 Commercial Plant Production (3)
Covers production of greenhouse plants, nursery plants and nursery operations. Involves design, management, and harvesting for field and container growing operations. Also surveys related growing operations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student.

AGH-279 Botany for Horticulture (2)
Examines basic plant material anatomy, physiology and taxonomy. Emphasis is placed on plant material used in landscape and turf fields. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGH-282 Pesticide Application Certification-Horticulture (1)
Reviews materials and testing procedures used to certify pesticide applicators. Concentration is provided on core testing. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGH-293 Landscape Business Operations (2)
Introduces marketing, merchandising, advertising and business analysis as it relates to landscape business. Specialty management techniques and systematic business approaches are explored. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student.

AGH-295 Horticulture Merchandising (2)
Introduces the student to basic sales procedures and stresses product knowledge of horticulture products and services. Students concentrate on relating product information to customers. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student.

AGH-300 Hardscape Installation Techniques (3)
Elevates students beyond basic hardscape installation. Studies contemporary design and installation trends. Provides hands-on experience with the latest construction materials. Includes opportunities for professional certifications in product installation. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-144, CON-134; Arts & Sciences Elective Code: B

AGH-301 Sustainable Site Management (2)
Covers the latest topics in environmentally-sound landscape practices. Introduces green building, on-site water management strategies and habitat preservation. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGH-302 Advanced Landscape Design (3)
Builds on the fundamentals of landscape design. Includes large scale commercial and recreational projects, as well as detailed hardscape designs. Studies the industry's latest design trends. Includes opportunities for professional certification. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-152, AGH-156; Arts & Sciences Elective Code: B

AGH-400 Athletic Field Maintenance (3)
Involves the design, preparation, and maintenance of athletic fields for various sports. Includes the study of various playing surfaces, drainage systems and specialized equipment used on athletic fields. Course includes field trips to local athletic complexes. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-112; Arts & Sciences Elective Code: B

AGH-405 Golf Course Maintenance (3)
Involves the theory of design, installation and maintenance of specialized turf and other areas commonly found on golf courses. Student is provided with experience maintaining an on-campus golf green, fairway and tee. Course includes field trips to local golf courses. Credits: 3, Hours: (2/2/0/0), Prereq: AGH-112; Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-411 Grounds Computer Applications (3)
Covers uses of computers in the grounds and golf course fields. Emphasis is on introductory irrigation design/management, business management and grounds course management software. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-425 Grounds Maintenance (3)
Introduces maintenance practices used in sports complexes, parks and recreation areas, and commercial and industrial grounds. Pesticide certification requirements are also covered. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGH-460 Design Capstone (2)
Provides second-year design students with a complete design project. Requires students to utilize skills acquired throughout the program, including examining soils and fertility, construction techniques and plant material characteristics. Credits: 2, Hours: (1/2/0/0), Prereq: AGH-152, AGH-156, AGH-302; Arts & Sciences Elective Code: B

AGH-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AGH-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGH-948 Special Projects (1-3)
Involves individualized study programs or projects supervised by instructional staff. Students resolve special interests/needs through research, experimentation or other related methods. Credits: 1, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: B

AGM: AG-Mechanics

AGM-103 Agricultural Electrical (3)
Builds on electrical skills learned in Fundamentals of Electricity with emphasis on electrical circuits and subassemblies found in most tractors, skid loaders and combines. Concentrates on the circuits in interior and exterior lights, dash, wiper motors, temperature controls, electric hydraulic controls, electric transmission controls, and on-board computers. Credits: 3, Hours: (2/2/0/0), Prereq: DSL-143; Arts & Sciences Elective Code: B

AGM-113 Hydraulics I (3)
Introduces the basic laws and theories of fluid power. Includes operation and testing of pumps, valves, cylinders and motors commonly found in vehicles and equipment. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGM-124 Technical Procedures for Power Mechanics Technicians (3)
Identifies the general knowledge and procedures used by power technicians. Covers tool selection, general shop safety, fire safety and forklift operation. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGM-403 Combine Operation & Adjustment (2)
Introduces combine operation and safety. Includes hands-on, in-the-field machine operation and adjustment. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGM-404 Combine Servicing (4)
Emphasizes repairing and reconditioning combines and chopper units. Includes basic hydraulic, electric, power train, monitor, and chassis adjustments. Credits: 4, Hours: (0/8/0/0), Coreq: AGM-403; Arts & Sciences Elective Code: B

AGM-405 Ag Engines (3)
Introduces diesel engines commonly used in the ag industry. The design of engine components and subassemblies is examined with an emphasis on why certain design features are used. Correct procedures for testing and servicing ag engines are explained and demonstrated. Credits: 3, Hours: (2/2/0/0), Prereq: DSL-355; Arts & Sciences Elective Code: B

AGM-406 Fundamentals of Power Transfer (3)
Includes an introduction to basic drive trains including clutches, manual transmissions, propeller shafts, rear axle assemblies and planetary gears. Emphasizes operation, diagnosis, repair and maintenance procedures. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGM-409 Agricultural Diagnosis (13)
Approaches diesel and gas-powered engine diagnosis and overhaul from a hands-on perspective. Students repair real farm equipment with minimal instructor supervision. Emphasizes extensive engine testing, troubleshooting, repairing, inspecting and assembling. Credits: 13, Hours: (3/20/0/0), Prereq: AGM-103, AGM-124, AGM-405 AGM-406, AGM-422, AGM-440, DSL-143, DSL-355; Coreq: AGM-414; Arts & Sciences Elective Code: B

AGM-414 Fundamentals of Air Conditioning (2)
Provides a comprehensive introduction to air conditioning in diesel powered vehicles. Students gain a basic understanding of theory, diagnostic practices and procedures essential to air conditioning servicing. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGM-419 Machinery Servicing (3)
Allows students to recondition used farm equipment such as planters, sprayers, disks and other tillage equipment. Does not include the engine-powered part of the machine. Includes testing and diagnosis of electronic monitoring systems. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGM-422 Diesel Fuel Systems (4)
Covers diesel fuel systems in relation to the engine itself. Diagnosis and testing or troubleshooting take place using special testing tools. Particular fundamentals are covered in compression testing, pump timing, engine component testing, and injector removal testing and repair. Credits: 4, Hours: (2/4/0/0), Prereq: DSL-355; Arts & Sciences Elective Code: B

AGM-440 Power Shift Transmissions (3)
Covers operation, theory, diagnosis and overhaul of fluid-driven equipment. Includes power shift, hydrostatic- and hydraulic-assist transmissions. Also includes torque converters. Credits: 3, Hours: (1.5/3/0/0), Prereq: AGM-406; Arts & Sciences Elective Code: B

AGM-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AGM-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGM-932 Internship (1-5)
Involves employment allowing the student practical, on-the-job training with a business related to the student's instructional program. Student is required to prepare a training plan and other reports. Credits: 1-5, Hours: (0/0/0/4), Arts & Sciences Elective Code: B

AGN: AG-Natural Resources/Forestry

AGN-105 Applications of Natural Resources (3)
Explores software, hardware and applications used in the natural resource field. Emphasizes desktop publishing, GPS/GIS and interpretive applications. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGN-132 Plant Management for Parks (3)
Emphasizes the establishment and maintenance of plant materials typically encountered in state, county and city park systems. Covers establishment procedures and proper maintenance practices for basic turf species, trees, shrubs and groundcovers utilized in park systems. Focuses on maintenance practices including mowing, pruning, fertilization, pest control and proper plant placement. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGN-140 Plants of the Wild (3)
Identifies plant materials existing in natural woodlands, roadsides and prairies. Special emphasis is placed on prairie forbs. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-220 Avian Wildlife (3)
Includes training in identification and management of nesting and game birds of the upper Midwest. Environmental requirements and relationships are included. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-223 Aquatic Wildlife (3)
Studies the identification of fish, amphibians and reptiles native to Iowa. Emphasis is placed on habitat requirements and management concerns. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-226 Mammalian Wildlife (3)
Provides training in identification and management of upper Midwest mammals. Environmental requirements and relationships are stressed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-235 Park and Recreation Administration (3)
Examines the organization and administration of park systems and recreational programs. Current issues in park management are covered. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Must be a second-year student

AGN-240 Natural Resources Interpretation (3)
This course develops skills in all facets of interpretation. Nature walks, public presentations, displays, news releases and photography are incorporated into interpretive exercises. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-244 Wildlife Management (3)
Students learn proper wildlife management through carefully planned and maintained reserves, preserves and refuges. Management techniques presented include those for game, non-game and aquatic animals. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-248 Natural Resources Appreciation (3)
Surveys the nonliving natural resources of Iowa. Examines how park and recreation agencies integrate these resources into their overall programs. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-250 Park Maintenance Programs (3)
Includes development and analysis of maintenance programs for buildings, campgrounds, lake areas and related recreational facilities. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Second-year student

AGN-260 Wildland Firefighter Training (3)
Covers the four training segments required for wildland firefighter certification: S-130 reviews basic wildland firefighting skills, S-190 studies fire behavior and the environmental factors that affect fire behavior, L-180 addresses human factors on the fireline, and I-100 studies the wildland firefighting management system. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGN-270 Watershed Assessment and Management (3)
Focuses on the basic concepts of watershed processes, including how water, sediment and nutrients are transported downstream in the drainage network. Describes the primary components of streams and how stream hydrology and water quality can be altered by human activities. Discusses strategies for watershed assessment and implementing best management practices. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGN-300 Rain Gardens and Bioretention Cells (3)
Addresses the use of rain gardens and bioretention cells for stormwater quality management and landscape beautification. Covers function, design, landscape positioning, installation, and maintenance of rain gardens and bioretention cells. Focuses on integrating rain gardens and bioretention cells into site planning and design, as well as installing and maintaining them on Iowa landscapes. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGN-310 Rainwater Harvesting Systems (3)
Demonstrates use of rainwater collection systems for irrigation, and household, commercial and industrial use. Covers the history, current trends, geographic potential, benefits, design, installation and maintenance of both simple and complex rainwater capture systems. Examines how to integrate rainwater harvesting systems into site planning and design, as well as how to install, maintain and maximize the potential benefits of the sustainable practice. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Requires approval of supervising professor and dean. May be taken

more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

AGN-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGP: AG-Precision AG

AGP-329 Introduction to GPS (3)
Studies fundamental processes of Global Positioning Systems with an emphasis on agriculture applications. General technical aspects of GPS satellites, differential correction and hardware will be covered. Agricultural mapping, navigation, VRT and yield monitoring will be discussed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGP-333 Precision Farming Systems (3)
Provides a background in the tools of precision farming, GPS, GIS and VRT. Introductory use of each of these tools in a precision farming system and how they are applied on the farm are covered. Hands-on activities with local data will provide a practical experience in the use of these tools. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGP-405 Introduction to ArcView (3)
Provides an overview of the various applications of geographic information systems (GIS). ArcView software is used to cover basic interface, views, themes, tables and layouts. Basic functions such as query and editing layers are previewed. Hands-on computer exercises provide practical experience in several disciplines including agriculture, city/government planning or transportation. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGP-407 ArcInfo in Agriculture (4)
Covers the basic use of ArcInfo and its specific application to agriculture. ArcMap, ArcCatalog and ArcToolbox are used to accomplish specific agricultural tasks. Though focused toward agriculture, other disciplines are also discussed and concepts can be applied. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: B

AGP-410 Visual Basic Programming (3)
Provides an introduction to programming using Visual Basic. Scripts and requests used by many software programs can be edited using Visual Basic. Fundamentals of programming and common specific commands are covered. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGP-411 Advanced Database (3)
Details analysis and management techniques, as well as import and export functions. Oracle will be introduced. Databases have become important tools in business and industry with the use of MIS and GIS. These programs use advanced databases, which can be very powerful tools. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGP-420 Geospatial Data Collection (3)
Provides detailed instruction and hands-on use of GPS receivers and dataloggers to collect field data. The process for creating spatial data structure, maintenance of equipment and use of datalogging software is the main focus. Data management and evaluation are also covered. Credits: 3, Hours: (2/2/0/0), Prereq: AGP-333; Arts & Sciences Elective Code: B

AGP-425 Agricultural Spatial Analysis (3)
Provides a background in the analysis of spatial data. Specific topics include transformation and retrieval of data, analytical techniques and spatial modeling. Concepts of multivariate and multitemporal analysis are also discussed. Credits: 3, Hours: (2/2/0/0), Prereq: AGP-405; Arts & Sciences Elective Code: B

AGP-430 Physical Geography for Agriculture (3)
Studies how and why physical earth attributes vary spatially. Emphasizes the spatial distribution of the earth's natural geological and soil features, and climatic and weather patterns. Datums, projections and coordinate systems are discussed. Geographic Information Systems are used to provide students with hands-on experience in mapping. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGP-434 Advanced Precision Farming Systems (3)
Provides an overview of GPS and GIS technology, their uses on modern U.S. crop farms, and how they impact management decisions and activities. Credits: 3, Hours: (2/2/0/0), Prereq: AGP-333; Arts & Sciences Elective Code: B

AGP-435 Advanced Precision Farming Systems-Software (3)
Introduces various precision farming software in real-world applications. Focuses on initial setup, creating management and production lists, saving and unloading data cards, processing field data, and compiling reports and prescription/application maps. Credits: 3, Hours: (2/2/0/0), Prereq: AGP-333; Arts & Sciences Elective Code: B

AGP-436 Advanced Precision Farming Systems-Hardware (3)
Focuses on precision farming hardware components. Students install displays, GPS units and control components, and are required to read and understand technical manuals. Credits: 3, Hours: (1/4/0/0), Prereq: AGP-333; Arts & Sciences Elective Code: B

AGP-440 Ag Applications of Digital Imagery (3)
Provides background in the use of remotely sensed digital imagery for agricultural decision making. Specific topics include types of images, methods of collecting imagery, verification, interpretation and analysis of data. Use of data for decision making is also discussed. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGP-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AGP-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGS: AG-Animal Science

AGS-100 Introduction to Swine Production (2)
Provides background knowledge on the entire pork production system, from breeding to the end pork product. Presents a general overview of the phases of production, including breeding and gestation, farrowing management, and nursery and finishing management. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGS-113 Survey of the Animal Industry (3)
Breeds, basic management and marketing of farm animals. Composition, evaluation and marketing of animal products. Includes live animal demonstrations with cattle for meat and milk, horses, poultry, sheep and swine. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGS-214 Domestic Animal Physiology (3)
Studies the comparative anatomy and physiology of the major body systems of cattle, sheep, swine and horses. Includes laboratory exercises involving physiology and anatomy of animals in healthy and diseased states. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGS-220 Domestic Animal Physiology Lab (1)
Uses laboratory exercises to compare the anatomy and physiology of animals in healthy and diseased states. Credits: 1, Hours: (0/2/0/0), Coreq: AGS-214; Arts & Sciences Elective Code: A

AGS-223 Swine Science (4)
Presents current practices and strategies needed to profitably produce food animals. Lab exercises provide hands-on exposure to management of animals in all stages of production. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: A

AGS-225 Swine Science (4)
Presents current practices and strategies needed to profitably produce food animals. Lab exercises provide hands-on exposure to management of animals in all stages of production. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: A

AGS-279 Livestock Merchandising (2)
Covers the fundamentals of preparing for successful livestock sales, including advertising, photography, livestock preparation, sale guidelines and customer support. Students participate in one to three livestock sales. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AGS-280 Livestock Merchandising (3)
Covers the fundamentals of preparing for successful livestock sales, including advertising, photography, livestock preparation, sale guidelines and customer support. Students participate in one to three livestock sales. Credits: 3,

Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGS-305 Livestock Evaluation (3)
Examines the selection of breeding and meat animals based upon performance and visual appraisal. Students will use Kirkwood farm laboratory livestock and may include off-campus assignments. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGS-307 Professional Horse Judging (1)
Examines the selection of breeding and show horses based on conformation and performance. Field trips and off-campus evaluation provide judging experiences for students. Oral reasons and judge certification process are covered. Students compete at intercollegiate contests. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

AGS-319 Animal Nutrition (3)
This course covers nutritional principles, digestive systems, composition and nutritional characteristics of common feedstuffs, ration formulation, and recommended feeding programs for farm animals. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGS-338 Livestock Behavior and Welfare (5)
Studies applications of basic animal behavior principles to ensure optimum performance and well-being. The course examines the effects of environment, stress, disease and nutrition on animal physiology and performance. Credits: 5, Hours: (2/6/0/0), Prereq: AGS-113, AGS-214; Arts & Sciences Elective Code: A

AGS-350 Artificial Insemination of Cattle (1)
Develops skills of artificial insemination, heat detection and supportive background knowledge of beef and dairy herds, and discusses recommended nutrition, management and genetics. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

AGS-425 Swine Systems Management (3)
Identifies records needed in swine production and record keeping techniques. Students prepare budgets and cash flows as they relate to swine production. Also, various marketing opportunities and practices are examined and analyzed. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

AGS-441 Livestock Housing and Equipment (3)
Studies the design and management of livestock facilities to limit stress and optimize performance. Students learn methods to minimize the environmental impact of livestock operations. Credits: 3, Hours: (2/2/0/0), Prereq: AGS-214, AGC-130; Arts & Sciences Elective Code: A

AGS-530 Swine Reproduction and Management (5)
Recognizes swine reproductive characteristics and reproductive functions of swine breeding stock, and identifies type and confirmation necessary for economic production. Also deals with breeds, breeding programs, breeding systems, including A.I., and appropriate management techniques. Credits: 5, Hours: (2/6/0/0), Arts & Sciences Elective Code: A

AGS-550 Beef Breeding/Reproduction/Nutrition (5)
Studies the anatomy and physiology of the female and male reproductive systems. Develops an understanding of proper use of heat synchronization, A.I., super ovulation, embryo transplants and new developments in biotechnology. Also deals with health, heritability and nutritional problems. Credits: 5, Hours: (3/4/0/0), Arts & Sciences Elective Code: B

AGS-551 Beef Science Management (3)
Works with evaluation management by identifying, measuring and selecting commercially important traits of beef cattle. Provides the basic information needed to understand terminology and predict performance through the use of sire summaries. Allows students to improve average performance of offspring by matching genetic potential to feed resources through multiple trait selection. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGS-555 Beef/Cow Calf Production (3)
Includes participation in calving of the Kirkwood Community College herd. Deals with proper nutrition, health, solving O.B. problems and preparation of cow's return to estrus. Also includes records, identification and pasture management. Credits: 3, Hours: (1.5/3/0/0), Arts & Sciences Elective Code: B

AGS-560 Beef Industry and Feedlot Management (5)
Presents an overview and introduction to the entire beef industry. Relates and applies methods of starting cattle on feed and fall management of weaned calves. Deals with feedlot budgeting, determination of 205-day weights, ratios and fall management of the beef cow herd. Credits: 5, Hours: (3/4/0/0), Arts & Sciences Elective Code: B

AGS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AGS-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGS-948 Special Projects (1-3)
Includes an agreed-to development plan for an applied problem solution. Allows student to pursue exploration and fact gathering of special-interest projects. Student and instructor meet weekly for discussion, observation and evaluation of the project development. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGT: AG-Technology

AGT-120 Agricultural Biotechnology (3)
Students explore the application of biotechnology techniques and products in agriculture from production to consumption of food. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

AGT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AGT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGV: AG-Vet-Tech

AGV-101 Veterinary Assisting (3)
Allows students to develop basic clinical skills expected of a veterinary assistant. Topics include basic restraint techniques, bandaging, basic laboratory procedures, basic radiology including safety and animal anatomy as related to patient positioning recognition, aseptic surgical recovery, and client communication. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGV-103 Introduction to Veterinary Science (3)
Studies the comparative anatomy and physiology of the major body systems of domestic animals and how anatomy and physiology are altered in disease states. Examines the effects of environment, stress, disease and nutrition on animal physiology and well-being. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-105 Animal Behavior/Kennel Management (5)
Studies basic animal behavior and the influences that modify behavior and kennel management including laws, records and daily operation of kennels. Practical experience is included. Credits: 5, Hours: (3/4/0/0), Arts & Sciences Elective Code: B

AGV-107 Pharmacy Skills (3)
An introductory course in small animal health products. Special emphasis on safe handling, storage, dispensing and use of common veterinary drugs and products. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B; Comments: Will not meet Veterinary Technician Pharmacology requirement

AGV-120 Veterinary Medical Terminology (1)
Focuses on reading and interpreting medical charts and records, and conversing with veterinary professionals. Designed for students to develop a working understanding of the language of veterinary medicine. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGV-126 Animal Anatomy and Physiology I (3)
Beginning anatomy and physiology with veterinary clinical emphasis. Provides the basis for study of conformation, production and pathological processes of diseases of dogs, cats, horses, sheep, goats, cattle, swine and laboratory animals. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGV-127 Animal Anatomy and Physiology II (4)
Studies anatomy and physiologic principles of domestic animals. Continuation of physiological

principles in Animal Anatomy and Physiology I. Credits: 4, Hours: (4/0/0/0), Prereq: AGV-126; Arts & Sciences Elective Code: B

AGV-140 Veterinary Pharmacology (3)
Studies medications and products commonly used in veterinary medicine. Credits: 3, Hours: (3/0/0/0), Prereq: AGV-127, AGV-142; Arts & Sciences Elective Code: B

AGV-142 Math for Vet Tech (3)
Covers pharmaceutical mathematics with an emphasis on dosage calculations and fluid therapy as related to veterinary medicine. Course is open to Vet Tech students only. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-143 Canine and Feline Nutrition (3)
Studies the nutritional requirements of dogs and cats with an emphasis on client education and customer service. Students analyze pet foods, identify strengths and weaknesses of commercial diets and gain the basics of therapeutic nutrition. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-144 Fundamentals of Small Animal Nutrition (3)
Covers essential nutrients and the roles of each in an animal's metabolism, with an emphasis on the nutritional management of dogs and cats. Basic clinical and therapeutic nutrition are covered in depth. Includes analysis of many commercial pet foods. Credits: 3, Hours: (3/0/0/0), Prereq: AGV-126, AGV-127; Arts & Sciences Elective Code: B

AGV-146 Large Animal Care (3)
Provides general livestock husbandry, handling and restraint involving horses, cattle, sheep and swine. Includes major breed identification, characteristics, behavior traits, latest humane handling techniques and physical restraint. Credits: 3, Hours: (1/4/0/0), Prereq: AGV-126; Arts & Sciences Elective Code: B

AGV-152 Veterinary Computer Applications (2)
Introduces the student to computer software commonly used in veterinary practice. Students will become proficient in the use of Microsoft Office software and software used in the routine management of veterinary records. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGV-153 Veterinary Reception and Administration Skills (3)
Gives the student the skills necessary to function as a receptionist in a veterinary hospital. Focuses on telephone techniques, medical records, legal aspects of veterinary medical records, vaccination protocols, client communication, dealing with death and euthanasia, the admittance and discharge of patients, financial aspects of veterinary practice and basic practice management principles. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-155 Shelter Administration and Computer Applications (3)
Introduces computer software commonly used in animal-related businesses. Highlights Microsoft Office software and software packages used in the routine management of animal shelter and animal control recordkeeping. Stresses front office procedures, and reception and client relations skills. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-158 Veterinary Law and Ethics (3)
Discusses moral, ethical and legal principles applicable to veterinarians and their employees, breeders, kennel operators, pet groomers and others allied to the small animal industry. Considers state, local and federal regulations relating to the industry. Effective client relations and telephone courtesy skills are also stressed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-161 Animal Nursing I (3)
Introduces the fundamentals of animal nursing. Includes animal handling and restraint, patient admission and history, preparation and administration of vaccines and medications, care of hospitalized patients, introduction to radiology, practice management, client relations and sanitation. Limited to Veterinary Technician students. Credits: 3, Hours: (1/4/0/0), Prereq: AGV-105, AGV-126, AGV-142; Arts & Sciences Elective Code: B

AGV-162 Animal Nursing II (3)
Continuation of Animal Nursing I. Covers foundation material in pre- and post-surgical care, surgical assisting, fluid therapy, dental prophylaxis, anesthesiology, clinical pharmacy and basic nursing skills. Clinic and hospital record keeping are covered with an introduction to practical radiology. Credits: 3, Hours: (0/6/0/0), Prereq: AGV-140, AGV-161, AGC-932; Arts & Sciences Elective Code: B

AGV-163 Animal Nursing III (3)
Continuation of Animal Nursing II. Emphasis is on radiology, record keeping, pharmacology associated with emergency care, inventory control, anesthesiology, dentistry, surgical assistance, and raptor care skills. Credits: 3, Hours: (0/6/0/0), Prereq: AGC-932, AGV-162; Arts & Sciences Elective Code: B

AGV-167 Veterinary Clinic Pathology I (3)
Introduction to veterinary clinical pathology with an emphasis on laboratory procedures commonly performed in private practice. Fecal analysis, basic urinalysis and basic hematology are covered. Proper care and maintenance of laboratory equipment is stressed. Credits: 3, Hours: (2/2/0/0), Prereq: AGV-127; Arts & Sciences Elective Code: B

AGV-168 Veterinary Clinic Pathology II (3)
Basic clinical pathology laboratory procedures including specimen collection and preservation, hematology, and fecal exam preparation. Hematology will include preparation and performance of PCV, Hb, WBC, RBC counts, preparation and staining blood smears, and performance of differential cell counts. Limited to Veterinary Technician students. Credits: 3, Hours: (2/2/0/0), Prereq: AGV-167, AGC-932; Arts & Sciences Elective Code: B

AGV-169 Veterinary Clinic Pathology III (3)
Refinement of hematology and other skills acquired in Veterinary Clinical Pathology II. Additional units include urinalysis, electrocardiography, necropsy, cytology and specialized clinical procedures. Credits: 3, Hours: (2/2/0/0), Prereq: AGC-932, AGV-168; Arts & Sciences Elective Code: B

AGV-171 Large Animal and Poultry Medicine (4)
Common and significant disease and health problems of livestock and poultry. Emphasis on herd/flock health, etiology, clinical symptoms, treatment and prevention. Credits: 4, Hours: (3/2/0/0), Prereq: AGV-140; Arts & Sciences Elective Code: B

AGV-175 Small Animal and Cage Bird Medicine (4)
Common and significant diseases of companion and laboratory animals. Diseases affecting birds and small animals with emphasis on etiology, clinical symptoms, treatment and prevention. Credits: 4, Hours: (3/2/0/0), Prereq: AGV-140; Arts & Sciences Elective Code: B

AGV-179 Lab Animal Medicine (1)
Introduces students to laboratory animals used in research. Practical care with selected animals. Credits: 1, Hours: (0/2/0/0), Prereq: AGV-162, AGV-168; Arts & Sciences Elective Code: B

AGV-190 Animal Welfare and Shelter Management (4)
Develops the skills necessary for day-to day management of an animal housing facility. Examines development of infectious disease control policies, and cleaning and disinfection protocols. Focuses on the daily operation of an animal housing facility to include population management, cleaning and disinfection, disease and infection control within a facility, animal housing, exercise and space needs, enrichment, temperament assessment and adoption procedures. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: B

AGV-191 Animal Behavior and Restraint (3)
Examines animal capture and restraint from a behavioral perspective. Studies species and breed normal behaviors, and common restraint and capture techniques. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-192 Shelter Medicine (3)
Introduces common diseases of animals housed in shelter situations. Focuses on identifying mechanisms of disease transmission, diagnosis, prevention and therapy. Addresses proper handling, storage and administration of common vaccinations. Presents basic principles of first aid and physical examination. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-193 Vehicle Safety and Operations (1)
Introduces the safe operation of animal control vehicles. Develops proficiency and an understanding of safe and legal operation of trucks and trailers, trucks with small animal boxes, and other related animal control and transport vehicles. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

AGV-194 Disaster Animal Response Training (1)
Familiarizes participants with disaster situations and provides the background necessary to assist an agency in effective emergency animal relief efforts. Covers Incident Command Systems (ICS), animal rescue and transport, community needs, and working with state and national ani-

mal rescue groups. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

AGV-195 Large Animal Welfare (3)
Discusses livestock husbandry, handling and nutrition from an animal welfare and animal control perspective. Includes major breed identification and characteristics, behavior traits, humane handling techniques and appropriate housing for cattle, horses, sheep, swine and camelids. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AGV-196 Euthanasia Technician (1)
Introduces acceptable methods of euthanasia based on the AVMA's current guidelines. Presents restraint techniques, administration of selected euthanasia agents, as well as proper handling, record keeping and storage of euthanasia agents. Develops techniques for recognizing and coping with stress and burnout related to euthanasia. Covers laws relating to controlled substances and animal disposal. Successful completion of the course will earn the student certification as a Euthanasia Technician. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B; Comments: Enrollment limited to Humane Officer Training and Veterinary Technology students

AGV-197 Basic Animal Investigation Techniques (3)
Introduces techniques for conducting animal cruelty investigations and procedures used to strengthen cases and convictions. Includes working with state and local laws, prosecutors and the court system. Students complete a series of case studies of animal cruelty cases. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-133, AGV-190; Arts & Sciences Elective Code: B

AGV-198 Wildlife ID and Management (2)
Introduces the identification, housing, nutrition and general care of wildlife indigenous to Iowa. Covers legal issues related to possession of wildlife, and working with Department of Natural Resources and wildlife rehabilitators. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AGV-199 Veterinary Forensics (3)
Explores the field of forensic science and its impact on science, society and the criminal justice system as it relates to animal-related laws. Provides a background in basic sciences while educating the Humane Officer Training student in the realities and limitations of scientific methods when applied specifically to criminal investigations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-201 Pet Grooming I (3)
Emphasis on health care and basics of cats and dogs, introduction to grooming equipment and handling. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

AGV-202 Pet Grooming II (3)
Covers terriers, terrier patterns and terminology. Perfecting basics and feline grooming. Building confidence. Credits: 3, Hours: (1/4/0/0), Prereq: AGV-201; Arts & Sciences Elective Code: B

AGV-203 Pet Grooming III (3)
Introduces the student to poodle patterns and mixed breeds. Teaches the use of clippers, scissoring and finishing the groom. Credits: 3, Hours: (1/4/0/0), Prereq: AGV-202; Arts & Sciences Elective Code: B

AGV-204 Pet Grooming IV (3)
Develops basic skills for entry-level employment. Covers all breed grooming and various business aspects of the grooming industry. Reviews Level I through III and finishing techniques. Credits: 3, Hours: (1/4/0/0), Prereq: AGV-203; Arts & Sciences Elective Code: B

AGV-300 Clinical Veterinary Experience (2)
Studies the practical application of technical veterinary assisting skills while working in private veterinary practice. Focuses on caring for hospitalized patients, admitting and discharging patients, providing general kennel sanitation and record keeping. Credits: 2, Hours: (0/0/0/8), Prereq: AGV-105, AGV-152, AGV-153, AGV-158; Coreq: AGV-101; Arts & Sciences Elective Code: B

AGV-400 Grooming Shop Management I (3)
Covers basic small business concepts for self-employed or independent contractor pet groomers, including financing, regulatory and licensing concerns, business location, insurance, recordkeeping and tax considerations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-401 Grooming Shop Management II (3)
Focuses on day-to-day management of the grooming shop, including competitive analysis, marketing and advertising, client relations, shop safety and cleanliness, and hiring and managing employees. Discusses add-on services and shop management software. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

AGV-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AGV-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AGV-948 Special Projects (1-3)
Includes an agreed-to development plan for an applied problem solution. Student and instructor meet on a weekly basis to review progress. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

ANT: Anthropology

ANT-105 Cultural Anthropology (3)
Explores what it means to be human. A comparative, holistic study of group life in various cultures is undertaken. Selected aspects of physical and cultural anthropology perspectives provide the basis for these cross-cultural examinations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ANT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ANT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

APP: Apparel Merchandising

APP-120 Apparel Visual Merchandising (3)
Offers basic instruction in display construction, the relationship of display to the total promotional program, the role of the visual merchandiser, elements of display design, construction materials and merchandise selection. Students have an opportunity to create merchandise displays. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

APP-130 Principles of Fashion Merchandising (3)
Provides a historical and evolutionary introduction to the field of fashion merchandising: sociological, psychological and economic aspects of fashion; fashion terminology, fashion cycles; and current practices in fashion retailing. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

APP-140 Fashion History (3)
Covers the development of costumes and accessories as a part of a socioeconomic and cultural force from ancient times to the present and its relationship to contemporary fashion trends. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

APP-170 Fashion Trends and Consumer Analysis (3)
Examines diversity among consumers such as ethnicity, gender identity and body satisfaction. Students research current trends and predict the direction of future trends in consumer behavior. Credits: 3, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

APP-210 Apparel Textiles (3)
Studies basic fiber properties, yarn processing, fabric construction and fabric finishes. Fabric qualities are analyzed in relation to factors of design, strength, durability and serviceability. Directed laboratory activities provided. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

APP-220 Fashion Show Procedures (3)
Includes the principles of fashion show production: planning, coordinating and directing the fashion show. Credits: 3, Hours: (1/4/0/0), Prereq: APP-130; Arts & Sciences Elective Code: B

APP-240 Fashion Design (3)
Provides fashion sketching information to communicate various apparel styles. Historical re-

view, study of contemporary designers and fashion trends are also presented. Students have an opportunity to develop beginning sketches and a line of apparel. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

APP-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

APP-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

ARC: Architectural

ARC-100 Architectural Profession (1)
Overviews the professional ethics, human relations and contract procedures in the architectural profession. Emphasizes the players as well as the process and legal/contractual issues involved in a typical construction project. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

ARC-112 Architectural Drafting I (3)
Introduces the fundamentals of sketching through simulated projects encountered in the profession. Includes translating three-dimensional constructions to two-dimensional orthographic sketches, as-builts and details. Explores lettering, line quality, architectural dimensioning and scale reading, organization, drawing revision and sketching. The student is also familiarized with the tools and techniques of the trade. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ARC-135 American Architecture (1)
Introduces the history of American architecture and its architects. Emphasizes both 20th century and Iowa architecture. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

ARC-195 CAD SketchUp (3)
Introduces the basic concepts of architectural illustration and model building. Explores artistic expression using a variety of techniques, including computer software. Emphasizes development of artistic graphics and models necessary for representing architectural structures as well as locating them in context. Credits: 3, Hours: (2/2/0/0), Prereq: CSC-110 or IND-155; Arts & Sciences Elective Code: B

ARC-300 Architectural Sketching (3)
Introduces the fundamentals of sketching through simulated projects encountered in the profession. Includes translating three-dimensional constructions to two-dimensional orthographic sketches, as-builts and details. Explores lettering, line quality, architectural dimensioning and scale reading, organization, drawing revision and sketching. The student is also familiarized with the tools and techniques of the trade. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ARC-720 Architecture Health and Safety Certificate (1)
Provides basic training and professional certifications in architecture workplace health and safety. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

ARC-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ARC-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

ARC-932 Internship (2)
Provides practical experience in an architectural or construction work environment. Includes employer/supervisor evaluations and instructor visits/interview. Credits: 2, Hours: (0/0/0/128), Prereq: CAD-201, CAD-204; Arts & Sciences Elective Code: B

ART: Art

ART-101 Art Appreciation (3)
Provides an overview of art from a historical, contemporary and aesthetic frame of reference. Recommended for non-Art majors. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ART-133 Drawing (3)
Introduces analysis of visual form and principles of responsive drawing. Includes perspective, chiaroscuro and figure drawing. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-134 Drawing II (3)
Continues skills begun in Drawing. Emphasis on figure drawing from model, various media. Emphasizes development of personal expression and portfolio. Credits: 3, Hours: (2/2/0/0), Prereq: ART-133; Arts & Sciences Elective Code: A

ART-138 Figure Drawing (3)
Familiarizes students with drawing the human figure. Course focuses on observational drawing from the model, emphasizing the activity of drawing from life, refining skills in observation and rendering. Attention is given to formal aspects of drawing, including methods of approach and execution, personal expression and broader expectations vis-a-vis critique. Credits: 3, Hours: (2/2/0/0), Prereq: ART-133; Arts & Sciences Elective Code: A

ART-143 Painting (3)
Introduces oil or acrylic painting. Emphasizes canvas preparation, composition and craftsmanship. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-144 Painting II (3)
Builds on skills learned in Painting with emphasis on development of independent aesthetic judgments. Credits: 3, Hours: (2/2/0/0), Prereq: ART-143; Arts & Sciences Elective Code: A

ART-157 Printmaking (3)
Introduces intaglio, relief and stencil printmaking processes and composition. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-158 Printmaking II (3)
Continues technical development in relief and intaglio techniques; aesthetics stressed. Credits: 3, Hours: (2/2/0/0), Prereq: ART-157; Arts & Sciences Elective Code: A

ART-163 Sculpture (3)
Introduces techniques and concepts of sculpture using materials such as metal, glass, clay, wood, and plaster. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-164 Sculpture II (3)
Continues the exploration of techniques and concepts of sculptural form. Assignments are geared for progressive development in the individual's ability. Credits: 3, Hours: (2/2/0/0), Prereq: ART-163; Arts & Sciences Elective Code: A

ART-165 Sculpture III (3)
Continues the exploration and development of techniques and concepts of sculptural form. Assignments are geared for progressive development of the individual's ability. May be repeated once for credit. Credits: 3, Hours: (2/2/0/0), Prereq: ART-164; Arts & Sciences Elective Code: A

ART-173 Ceramics (3)
Introduces wheel-thrown forms and hand-building forms. Students examine methods of working with clay. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-174 Ceramics II (3)
Continues the development of wheel-throwing and hand-building skills. Assignments are geared for progressive development of the individual's ability. Credits: 3, Hours: (2/2/0/0), Prereq: ART-173; Arts & Sciences Elective Code: A

ART-175 Ceramics III (3)
Continues the development of wheel-throwing and hand-building skills gained in Ceramics II. Assignments are geared for progressive development of the individual's ability. May be repeated once for credit. Credits: 3, Hours: (2/2/0/0), Prereq: ART-174; Arts & Sciences Elective Code: A

ART-183 Photography II (2)
Continues exploration of photographic materials with emphasis placed on the development of a personal vision. Experimentation with the twin lens reflex camera. Credits: 2, Hours: (2/0/0/0), Prereq: ART-181; Arts & Sciences Elective Code: A

ART-184 Photography (3)
Provides aesthetic, ethical and philosophical frameworks used in understanding the historical and contemporary worlds of photography. Focuses on both film and digital cameras. Highlights principles and elements of design and photographic composition. Photographs are created in a traditional and contemporary setting for portfolio and display. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-185 Photography II (3)
Continues exploration of photographic capture/concept using traditional and digital media. Emphasizes development of personal vision while exploring the grammar of photography. The frame, focus, motion and materials used to produce work provide a framework for dictating the visual outcome. Traditional and digital approaches are combined in the production of student portfolios and displays. Credits: 3, Hours: (2/2/0/0), Prereq: ART-184; Arts & Sciences Elective Code: A

ART-186 Digital Photography (3)
Develops familiarity and proficiency with digital cameras, computers and printers. Studies technical and aesthetic issues in visual communication and digital image capture/presentation. Students complete presentations, critiques online, portfolio and displays. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-203 Art History I (3)
Introduces the history of art chronologically, from the prehistoric period in Europe to the early Renaissance. Cultivates a meaningful recognition of different styles, concepts and concerns through an analysis of selected paintings, sculpture, architecture and other mediums. Emphasizes the thematic issues prevalent in various time periods and geographic/cultural areas. Examines interpretation, concepts, theories, and comparison of styles and techniques through readings, visual presentations, lecture and discussion. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ART-204 Art History II (3)
Introduces the history of art chronologically, from the Renaissance to the 21st century. Cultivates a meaningful recognition of different styles, concepts and concerns through an analysis of selected paintings, sculpture, architecture and other mediums. Emphasizes the thematic issues prevalent in various time periods and geographic/cultural areas. Examines interpretation, concepts, theories, and comparison of styles and techniques through readings, visual presentations, lecture and discussion. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ART-220 Ceramics IV (3)
Provides opportunity for students to do advanced individual projects in sculptural and functional ceramics. Assignments are geared for progressive development of the individual's ability. Technical awareness of glaze materials, glaze formulation, firing techniques and studio operations are covered. Specific objectives are individualized and recorded in a contract signed by instructor and student. May be repeated for credit. Credits: 3, Hours: (2/2/0/0), Prereq: ART-175; Arts & Sciences Elective Code: A

ART-223 Digital Photography II (3)
Improves proficiency with digital SLR cameras, computer applications and printing. Students build on technical and aesthetic issues in visual communication and digital image concept, capture and presentation. Students explore RAW format digital processing and digital photo management applications. Strongly emphasizes digital manipulation. Credits: 3, Hours: (2/2/0/0), Prereq: ART-186; Arts & Sciences Elective Code: A

ART-283 Advanced Black and White Photography (3)
Refines exposure/development techniques, printing and finishing of archival print production. Emphasizes development of personal vision through use of traditional and digital capture. Production of student work includes silver-base, inkjet and alternative processes. Portfolios are produced and students are required to display work. Credits: 3, Hours: (2/2/0/0), Prereq: ART-185; Arts & Sciences Elective Code: A

ART-290 Projects in Photography (1)
Studies photography as a way to communicate or make art. Students propose a personal project that can be created in traditional or digital capture. Work is displayed and weekly meetings mark progress on student project. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

ART-301 Design Fundamentals (3)
Introduces design concepts and fundamental skills through studio exercises. Explores design elements such as shape, value, texture, color, line, space and mass. Students generate creative ideas and employ a variety of media and materials to gain visual sensitivity through practical experience. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-405 Jewelry: Metalsmithing I (3)
Introduces contemporary and traditional metalworking techniques and concepts, including the construction of small metal forms with a sculptural approach. The emphasis is on basic fabrication and manipulation methods. This class consists of group and individual demonstrations, discussions, and critiques. Slide lectures, visiting artists, reading and project assignments as well as discussions of current trends in the metals and craft fields will be covered. Demonstrations will include sheet metal fabrication, hammer forming, hydraulic die forming, soldering, riveting, repousse, etching, stone setting and patinations. Projects include the creation of jewelry, flatware, and other functional and non-functional objects using metals or other materials. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-407 Jewelry: Metalsmithing II (3)
Investigates contemporary and traditional metalworking techniques and concepts, including the construction of small metal forms with a sculptural approach. The emphasis is on basic fabrication, manipulation, and casting methods. This class consists of group and individual demonstrations, discussions, and critiques. Slide lectures, visiting artists, reading and project assignments as well as discussions of current trends in the metals and craft fields will be covered. Demonstrations include more advanced methods of sheet metal fabrication, hammer forming, hydraulic die forming, soldering, riveting, repousse, stone setting, patinations and casting. Projects include the creation of jewelry, flatware, and other functional and non-functional objects using metals or other materials. Credits: 3, Hours: (2/2/0/0), Prereq: ART-405; Arts & Sciences Elective Code: A

ART-420 Glass I (3)
Introduces contemporary and traditional glassworking techniques and concepts. Hot glassblowing, fusing, slumping and kiln casting will be covered. This class includes group and individual demonstrations, discussions, and critiques. Slide lectures, visiting artists, reading and project assignments as well as discussions of current trends in the field of glass art will be covered. Demonstrations include the creation of hollow forms, solid cast forms and flat fusing, and other functional and non-functional objects using glass. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

ART-422 Glass II (3)
Investigates contemporary and traditional glassworking techniques and concepts including hot glassblowing, fusing, slumping and kiln casting. This class consists of group and individual demonstrations, discussions and critiques. Slide lectures, visiting artists, reading and project assignments, as well as discussions of current trends in the field of glass art, will be covered. Demonstrations will include intermediate hot glass blowing, fusing, slumping and kiln casting. Projects will include the creation of hollow forms, solid cast forms and flat fusing, and other functional and non-functional objects using glass. Credits: 3, Hours: (2/2/0/0), Prereq: ART-420; Arts & Sciences Elective Code: A

ART-423 Glass III (3)
Continues exploration of contemporary and traditional glassworking techniques and concepts. Develops abilities on a progressive, individualized basis. Credits: 3, Hours: (2/2/0/0), Prereq: ART-422; Arts & Sciences Elective Code: A

ART-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ART-928 Independent Study (1-3)
Allows the student to do readings, papers, research and/or production work under the guidance of an art faculty member. Independent study contract required. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: A

ASL: American Sign Language

ASL-141 American Sign Language I (4)
Provides a beginning interactive course to promote comfort and knowledge in using grammar, syntax, vocabulary, fingerspelling, semantics and non-manual behaviors of American Sign Language in professional, social and everyday normal conversational situations. Emphasizes receptive and expressive skills. Course is taught in American Sign Language. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: A

ASL-171 American Sign Language II (4)
Continues development of American Sign Language grammar, syntax, vocabulary, fingerspelling, semantics and non-manual behaviors. Emphasizes comprehension, production skills and use of language in a cultural context. Course is taught in American Sign Language. This course applies toward satisfaction of Historical/Cultural core for an AA degree. Credits: 4, Hours:

(4/0/0/0), Prereq: ASL-141; Arts & Sciences Elective Code: A

ASL-241 American Sign Language III (3)
Expands on previously learned grammar, syntax, sentence structure and vocabulary in more depth. Emphasizes expressive skills through storytelling exercises and use of the language in a variety of situations. This course applies toward satisfaction of Historical/Cultural core for an AA degree. Credits: 3, Hours: (3/0/0/0), Prereq: ASL-171; Arts & Sciences Elective Code: A

ASL-271 American Sign Language IV (3)
Focuses on an expanded awareness of the behaviors, values and issues in Deaf culture through slang and varying levels of formality and socially appropriate language usage. Emphasizes receptive skills by reading signed stories and poetry. This course applies toward satisfaction of Historical/Cultural core for an AA degree. Credits: 3, Hours: (3/0/0/0), Prereq: ASL-241; Arts & Sciences Elective Code: A

ASL-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ASL-928 Independent Study (1-3)
Allows the student to do readings, papers, research /or other projects under the individual guidance of a staff member. Independent study contract required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ATR: Automation Tech & Robotics

ATR-200 Fanuc Programming for Robotic Welding (2)
Demonstrates the safe operation of a robot welding system including proper pendent use to create programs, set and change weld data and edit existing programs. Covers fundamentals of Fanuc programming techniques, language, editing, commands, menu structure, data schedules and recovery from basic systems errors through robotic welding exercises. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

AUT: Automotive Technology

AUT-104 Introduction to Automotive Technology (3)
Provides the beginning apprentice technician with an introductory overview of automotive servicing from a maintenance and replacement standpoint. Classroom and hands-on activities emphasize routine maintenance procedures in the care of tires, batteries, lighting, belts, hoses, filters and cooling systems. Presents career information on career pathways, employers, goal setting, skills inventory, student club information and personal plan. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AUT-163 Automotive Engine Repair (3)
Covers fundamentals of internal combustion engine operation, servicing and adjustment. Students learn theories in practical, hands-on applications in both the classroom and lab exercises. Credits: 3, Hours: (2/2/0/0), Prereq: AUT-104, AUT-603, MAT-715; Arts & Sciences Elective Code: B

AUT-165 Automotive Engine Repair (5)
Introduces internal combustion engine fundamentals. Covers engine operation, servicing, diagnosis and overhaul. Students disassemble, make precision measurements and reassemble an engine. Emphasizes theories in practical, hands-on applications in classroom and lab exercises. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-104, AUT-655, MAT-715; Arts & Sciences Elective Code: B

AUT-205 Automotive Automatic Transmissions and Transaxles (5)
Introduces Toyota's automatic transmission fundamentals. Covers automatic transmission operation, servicing, diagnosis and overhaul. Students disassemble, make precision measurements and reassemble a Toyota AB60E/F transmission. Focuses on identifying components, operational theory, powerflow and diagnosing several Toyota automatic transmissions and transaxles, through practical hands-on applications in the classroom and lab exercises. Requires students to R&R an automatic transmission or transaxle and perform all NATEF P-1, P-2 and P-3 tasks in the A2 ASE area. Covers specific Toyota units, including A-245E (Simpson Based Gear Train), U250E (Tandem Based Gear Train), U660E (Ravigneaux/Lepelletier Based Gear Train) and the AB60E (Compound Based Gear Train). Safety is required. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-104, AUT-655, MAT-715; Arts & Sciences Elective Code: B

AUT-303 Automotive Manual Drive Train & Axles (3)
Introduces students to fundamental principles related to manual drive trains including an introduction to basic drive trains including clutches, manual transmissions, shafts, rear axle assemblies and gears. Students learn operation diagnosis, repair and maintenance procedures. Lab exercises reinforce theories in practical, hands-on settings. Credits: 3, Hours: (2/2/0/0), Prereq: AUT-104, AUT-603, MAT-715; Arts & Sciences Elective Code: B

AUT-305 Automotive Manual Drivetrains and Axles (5)
Introduces manual drivetrain fundamentals. Includes manual drivetrain operation, servicing, diagnosis and overhaul. Students disassemble, make precision measurements and reassemble a manual transmission, transaxle, differential and transfer case. Focuses on theories in practical, hands-on applications in both the classroom and lab exercises. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-104, MAT-715; Arts & Sciences Elective Code: B

AUT-403 Automotive Suspension and Steering (3)
Focuses on front and rear suspension system principles of operation, system components and steering geometry as they relate to alignment and diagnosis of steering and suspension problems. Lab activities reinforce theories in a practical, hands-on application. Credits: 3, Hours: (2/2/0/0), Prereq: AUT-104, AUT-603, MAT-715; Arts & Sciences Elective Code: B

AUT-404 Automotive Suspension and Steering (4)
Introduces chassis fundamentals. Covers tire and wheel service, in addition to modern electronic steering and suspension systems. Focuses on front and rear suspension system principles, system components and steering geometry as they relate to alignment diagnosis. Students remove and replace steering and suspension components, and perform wheel alignment procedures. Reinforces theories in a practical hands-on application through lab activities. Credits: 4, Hours: (2/4/0/0), Prereq: AUT-104, MAT-715; Arts & Sciences Elective Code: B

AUT-503 Automotive Brake Systems (3)
Focuses on brake system theory, diagnosis and repair of drum brakes. Lab exercises reinforce lecture theories in a practical, hands-on setting. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AUT-505 Automotive Brake Systems (5)
Introduces automotive brake hydraulic system fundamentals. Covers brake system operation, servicing and diagnosis. Students machine rotors and drums, inspect disc/drum brakes and diagnose brake system electrical problems. Focuses on advanced braking systems, including antilock, electronic stability control, hill start and hybrid braking systems. Reinforces theories in practical, hands-on classroom and lab exercises. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-822, MAT-715; Arts & Sciences Elective Code: B

AUT-603 Basic Automotive Electricity (3)
Introduces students to basic fundamental electrical and electronics related to the automobile. Topics covered include voltage, amperage, resistance, Ohm's Law and practical application. Series, parallel and series-parallel circuits are also studied. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

AUT-611 Automotive Electricity (5)
Introduces electrical and electronic circuit theory. Covers voltage, amperage, resistance, Ohm's Law and practical application on series, parallel and series-parallel circuits. Emphasizes studying circuits through electrical wiring diagrams and introduces scan tools and digital storage oscilloscopes. Covers diagnosis of electrical circuits with and without multiplex network control. Includes certification as power users of the Snap-On 525D multi-meter. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-104; Arts & Sciences Elective Code: B

AUT-620 Hybrid Electric Vehicle Fundamentals (2)
Introduces the fundamentals of hybrid electric vehicles. Explores the hybrid power plant, including hybrid batteries, high- and low-voltage systems, inverters, safety procedures, hybrid

maintenance and diagnostics. Includes other alternative fuels. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

AUT-655 Automotive Advanced Electricity (5)
Covers automotive electrical systems with an emphasis on network controlled auxiliary systems, including navigation, audio, supplemental restraint and immobilizer theft deterrent. Builds diagnostic skills through extensive use of oscilloscopes and multi-meter for body electrical circuit problems. Covers general servicing of hybrid vehicles. Includes certification as power users of the Snap-On Generation I oscilloscope and component tester. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-611; Arts & Sciences Elective Code: B

AUT-703 Automotive Heating and Air Conditioning (3)
Provides a comprehensive introduction to vehicular air conditioning. Students develop a basic understanding of theory, diagnostic practices and procedures essential to air conditioning servicing. Development of sound practice and good judgment in performance of all air conditioning procedures is emphasized. Credits: 3, Hours: (1/4/0/0), Prereq: AUT-104, AUT-603, MAT-715; Arts & Sciences Elective Code: B

AUT-704 Automotive Heating and Air Conditioning (4)
Introduces Toyota/Lexus HVAC fundamentals. Focuses on refrigerant identification, recovery/recycling, evacuation, recharging and leak testing skills. Students remove and install an evaporator/heater core assembly on a Toyota/Lexus vehicle. Focuses on identifying components, operational theory, servicing and diagnosis of Toyota/Lexus HVAC systems through practical hands-on applications in the classroom and lab exercises. Includes EPA 609 Technician Certification. Requires all NATEF P-1, P-2 and P-3 tasks in the A7 ASE area. Safety is required. Credits: 4, Hours: (2/4/0/0), Prereq: AUT-822; Arts & Sciences Elective Code: B

AUT-720 Automotive Health and Safety Certificate (1)
Provides basic training and professional certifications in automotive workplace health and safety. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

AUT-816 Fuel and Ignition Systems (4)
Covers operational theory, diagnostics and preventive maintenance of automotive computerized ignition and fuel systems. Credits: 4, Hours: (3/2/0/0), Prereq: AUT-655; Arts & Sciences Elective Code: B

AUT-819 Computerized Engine Controls (8)
Focuses on Comprehensive Engine Diagnostic Analysis; basic engine compression, ignition system, cooling system, charging system, fuel system, computer data scan and trouble code check. Covers operational theory and diagnostics of input sensors, computer outputs and networking, On-Board Diagnostics II (OBD-II), computer systems, emission control systems and five gas analysis. A large part of class time is spent operating scopes, lab-scopes, and factory and aftermarket scan-tools. Credits: 8, Hours: (6/4/0/0), Prereq: AUT-816; Arts & Sciences Elective Code: B

AUT-821 Computerized Engine Controls I (5)
Introduces Toyota/Lexus engine control fundamentals. Focuses on identifying components, operational theory, servicing and diagnosis of Toyota/Lexus input sensors, ignition systems, fuel systems and ECU outputs through practical hands-on applications in the classroom and lab exercises. Includes certification as power user of the Snap-On Generation II oscilloscope and component tester. Requires all NATEF P-1, P-2 and P-3 tasks in the A8 ASE area. Safety is required. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-655; Arts & Sciences Elective Code: B

AUT-822 Computerized Engine Controls II (5)
Explores diagnosis of engine performance faults using all 10 modes of OBD II. Covers Types A, B and C engine misfires. Focuses on identifying components, operational theory, servicing and diagnosis of Toyota/Lexus fuel injection, secondary air injection and EVAP systems through practical hands-on applications in the classroom and lab exercises. Includes certification as power user of the Snap-On Generation II scan tool. Students perform all NATEF P-1, P-2 and P-3 tasks in the A8 ASE area. Credits: 5, Hours: (2/6/0/0), Prereq: AUT-821; Arts & Sciences Elective Code: B

AUT-888 Technical Lab I (4)
Simulated automotive repair environment. Learning activities include complaint, cause and correction to customer vehicles. Parts and labor calculations also covered. Credits: 4, Hours: (1/6/0/0), Arts & Sciences Elective Code: B

AUT-889 Technical Lab II (4)
Continues to expose students to an automotive repair environment. Learning activities include complaint, cause and correction to customer vehicles. Parts and labor calculations also covered. Credits: 4, Hours: (1/6/0/0), Prereq: AUT-104, AUT-603, MAT-715; Arts & Sciences Elective Code: B

AUT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

AUT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

AUT-932 Internship (2)
Builds applied skills through employment, providing practical, on-the-job training at businesses related to instructional programs. Students are required to prepare training plans and other reports. Credits: 2, Hours: (0/0/0/128), Arts & Sciences Elective Code: B

BCA: Business Computer Applications

BCA-070 College Readiness Experience Computer Skills (1)
Provides basic computer skills instruction to students enrolled in the College Readiness Experience program. Focuses on basic keyboard knowledge. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: D

BCA-080 College Prep Computer Skills I (1)
Provides basic computer skills instruction to students enrolled in the College Prep Block. Focuses on basic keyboard knowledge and command functions. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

BCA-085 College Prep Computer Skills II (1)
Provides computer skills instruction to students enrolled in the College Prep Block. Continues instruction using word processing software. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B; Comments: Placement test

BCA-135 Introduction to Word Processing (3)
Provides instruction in alphabetic and numeric keyboarding and includes exercises designed to increase speed to 45 words per minute with five or fewer errors on five-minute timed writings. Includes instruction in the use of proofreaders' marks and in creating standard business letters, interoffice memos, tables, simple reports and newsletters using Microsoft Word. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

BCA-136 Advanced Word Processing (3)
Begins with a review of basic business correspondence. Instruction includes advanced topics such as mail merge, macros, styles, complex tables, long reports, graphics and online forms. Guided drills are designed to increase speed to 55 words per minute with five or fewer errors on five-minute timed writings. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

BCA-138 Advanced Word Processing Applications (3)
Provides further reinforcement of all concepts learned in Advanced Word Processing. Covers mail merge, macros, styles, complex tables, desktop published documents, online forms and long reports. Includes keying specialized documents, such as agendas, news releases, itineraries and speeches. Guided drills are designed to increase speed to 60 words per minute with five or fewer errors on five-minute timed writings. Students learn to make effective document formatting decisions working independently. Credits: 3, Hours: (2/2/0/0), Prereq: BCA-136; Arts & Sciences Elective Code: A

BCA-179 PowerPoint Multimedia (3)
Develops knowledge of multimedia concepts by studying multimedia software and the hardware components needed to develop and view multimedia productions. Assessment projects are used by students for demonstration of knowledge of multimedia elements (copyright, video, graphics, sound, animation) knowledge of tools (digital camera, video camera, scanner, cams), and knowledge of editing software (sound editing,

video editing, graphics editing). Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

BCA-189 Microcomputer Literacy (1)
Introduces the student to the personal computer concepts and basic computer applications. Students gain knowledge and skills in the basic concepts of Microsoft Windows and Word. They also gain experience using the Internet and email. The course introduces students to spreadsheet and presentation software. This introductory course is intended for students with no knowledge or experience using personal computers. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

BCA-205 Database/Spreadsheets (3)
Develops proficiency in the use of database and spreadsheet computer applications. Includes creating and sorting tables, using functions and formulas, creating queries and reports, formatting data, filtering records, and creating charts and graphs. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

BCA-212 Introduction to Computer Business Applications (3)
Provides basic development of software applications using Microsoft Word, Access, Excel and PowerPoint. Apply this knowledge by creating documents, worksheets, databases and presentations for both business and personal use. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

BCA-213 Intermediate Computer Business Applications (3)
Extends basic knowledge of Microsoft Word, Access, Excel and PowerPoint. Upon completion of this course students should be able to demonstrate proficiency at the core level of the MOS (Microsoft Office Specialist) certification. Credits: 3, Hours: (2/2/0/0), Prereq: BCA-212 or CSC-110; Arts & Sciences Elective Code: B

BCA-221 Integrated Computer Business Applications (3)
Integrates the skills, knowledge and personal qualities necessary to perform in today's office setting. Students create documents integrating Microsoft Word, Excel, PowerPoint and Access. Students also demonstrate problem-solving techniques, decision-making skills and teamwork abilities. Credits: 3, Hours: (2/2/0/0), Prereq: BCA-136, BCA-179, BCA-205; Arts & Sciences Elective Code: B

BCA-286 Survey of Web Technologies (2)
Introduces the Web technology industry, including career opportunities and industry-standard tools for Web design and development. Explores current Web design applications, such as Adobe Photoshop and Dreamweaver, as well as current trends in the industry as they relate to technology use and design techniques. Students gain insight necessary to choose a specialization area within the Web Technologies degree. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

BCA-290 Web Design Principles (3)
Discusses the process of website design and production. Focuses on aesthetic design, which is style, theme and layout, as well as functional design, including usability, content and navigation. Incorporates the use of Web authoring software to produce and maintain websites. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-207; Arts & Sciences Elective Code: B

BCA-292 Media Tools for the Web (3)
Applies media tools to create and enhance multimedia presentations or Web sites. This course is designed to add additional software skills in the design and development of a presentation or a Web site. Students learn how to use photo, video and sound editing software. Credits: 3, Hours: (2/2/0/0), Prereq: BCA-290, CIS-207; Arts & Sciences Elective Code: B

BCA-300 Web Analytics (3)
Introduces the key concepts, tools, techniques and practices of Web analytics, a core business and communication channel organizations use to realize their Web sites' full potential. Focuses on how Web analytics can drive higher profits and improve customer experiences. Emphasizes techniques students can use to successfully advocate and promote the use of Web analytics by organizations. Credits: 3, Hours: (3/0/0/0), Prereq: BCA-290, CIS-207, CIS-307; Arts & Sciences Elective Code: B

BCA-302 Graphics and Multimedia for the Web (3)
Introduces a number of commercial and open source tools for manipulating graphics, audio and multimedia files for presentation on the web. While not a content creation course, some content editing is covered. Primary emphasis is placed on file types, encoding standards, plug-in issues, file optimization and markup options for various browsers and platforms. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

BCA-304 Emerging Technology Trends (1)
Integrates information technology into students' daily experience and provides opportunities to research and explore emerging technologies for class consideration and discussion. Develops awareness of current legal, societal, ethical, and economic dilemmas and trends driven by ever-changing information technology. Focuses on the importance of keeping abreast of technological changes that affect the office professional. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

BCA-320 Applied Web Technologies (3)
Explores a variety of open-source Web platforms based on Apache/PHP/MySQL technology. Emphasizes content management systems such as WordPress and Drupal, although more specialized systems are also considered. Focuses on deploying, configuring and styling these systems to meet a variety of business and client needs. Credits: 3, Hours: (2/2/0/0), Prereq: BCA-290; Arts & Sciences Elective Code: B

BCA-767 Adobe Acrobat (2)
Emphasizes publishing in portable document format (PDF) using Adobe Acrobat software. Add interactive elements or use comments to help review documents. Create slide shows and presentations with Acrobat. Learn how to place security locks on sensitive files. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B; Comments: Students should have a working knowledge of the computer and operating system.

BCA-800 Web Technologies Capstone (3)
Provides a cumulative experience for students to independently complete a portfolio-quality Web project. Integrates skills acquired in core and emphasis courses with individual strengths to develop comprehensive solutions. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-334; Arts & Sciences Elective Code: B; Comments: Students need to register for this course in the final term of program

BIO: Biology

BIO-104 Introductory Biology With Lab (3)
Intended as a beginning-level course for liberal arts students who are not planning to major in the sciences. The course includes genetics, evolution, ecology, plant and animal reproduction, and biodiversity. Current topics in life science are covered throughout the course. Students are offered a variety of opportunities in laboratory through investigations, discussion, written expression and readings. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

BIO-110 Basic Biological Concepts (3)
Designed for the student with little or no background in biology or chemistry, or as a refresher for the student who has not taken either for many years. Provides a basic foundation for further course work in the biological sciences. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

BIO-112 General Biology I (4)
Serves as an introductory course for biology, science and health science majors. Principles of cellular biology and elementary biochemistry and energy functions are covered; cell division, DNA/RNA and genetics follow. Evolution theory completes the work of the semester. Credits: 4, Hours: (3/2/0/0), Prereq: BIO-110 or BIO-168 or BIO-186; Arts & Sciences Elective Code: A; Comments: Besides taking a prerequisite course, proficiency may be demonstrated by a passing score on the Biology Readiness Exam. Contact the Test Center for details.

BIO-113 General Biology II (4)
Continues the study of General Biology I concentrating on organismal biology and ecology. The evolution and diversity of the Monera, Protista, Fungi, Plantae and Animalia are covered, followed by a comprehensive study of ecology. Additional topics include plant anatomy and physiology, and animal systems including, but not limited to, nervous, circulatory, reproductive and immune systems. Credits: 4, Hours: (3/2/0/0), Prereq: BIO-112; Arts & Sciences Elective Code: A

BIO-124 Botany for Non-Majors (4)
Surveys the plant kingdom from bacteria to seed-bearing plants, and studies general anatomy and physiological processes of plants. Initial studies are of plant cells followed by that of vegetative and reproductive organs. Physiological processes of photosynthesis, transpiration, absorption, conduction, respiration, pollination and fertilization are included. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: A

BIO-151 Nutrition (3)
Designed to show the relationship between sound nutrition and good health. Topics studied are: energy requirements, carbohydrates, lipids, proteins, vitamins, minerals, metabolism, physical exercise, dieting, weight problems, evaluation of nutritional claims, vegetarianism, and proper nutrition during pregnancy and lactation. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Does not count as a science course for the A.A. degree

BIO-154 Human Biology (3)
Examines human form and function and the relationship of humans to other living things. Fundamental biological principles as they apply to the human are explored. This course is intended for liberal arts students who do not currently plan to major in the biological or health sciences. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BIO-161 Basic Anatomy and Physiology (3)
Designed for students in the specific health sciences. An overview of human form and function presented in a lecture/laboratory format. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

BIO-168 Human Anatomy & Physiology I w/Lab (4)
Introduces the structure and function of the human body. Organization at the cellular and tissue level and selected organ systems are emphasized. Laboratory activities (which include computer simulations, dissection, and/or human specimens) reinforce current concepts. Credits: 4, Hours: (3/2/0/0), Prereq: One year of recent high school biology/chemistry with a grade of B or higher strongly recommended, or completion of Basic Biological Concepts or other college-level biology course; Arts & Sciences Elective Code: A

BIO-173 Human Anatomy & Physiology II w/Lab (4)
Continues the study of human organ systems. Laboratory activities and dissection, which includes computer simulations and human specimens, correspond to structures and functions investigated. Credits: 4, Hours: (3/2/0/0), Prereq: BIO-168; Arts & Sciences Elective Code: A

BIO-177 Human Anatomy (4)
Covers the gross structure and function of human body systems. Focuses on function as it relates to structure through class and laboratory activities. Laboratory experiences include cadaver study, human specimens, dissection and interactive group work. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: A; Comments: Recommend BIO-110 or recent high school science class with a grade of B or above

BIO-180 Human Physiology (4)
Examines the physiological processes associated with human body systems. Topics include biochemistry, metabolism, hormone actions, muscular physiology, neurophysiology, cardiovascular function, renal function, acid/base/electrolyte regulation, nutrient absorption, immune response and reproduction functions. Lab investigates system physiological responses and culminates in a research experience. Credits: 4, Hours: (3/2/0/0), Prereq: BIO-177; Arts & Sciences Elective Code: A

BIO-181 Homeostatic Physiology (3)
Designed for advanced Health Sciences students. This course emphasizes body systems important to maintaining homeostasis in the human. Nerve and muscle tissue, cardiac, respiratory, fluid-electrolyte and endocrine physiology are addressed. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-161; Arts & Sciences Elective Code: B

BIO-182 Basic Microbiology (1.5)
Includes the structures and function of microorganisms, characteristics of pathogenic and nonpathogenic bacteria, infection processes, specifics of the immune response, and principles and applications of asepsis. Credits: 1.5, Hours: (1/1/0/0), Arts & Sciences Elective Code: B

BIO-186 Microbiology (4)
Surveys bacteria, viruses and fungi: their growth characteristics, morphology and pathogenicity. The epidemiology and diagnosis of pathogenic bacteria and an introduction to immunology are also included. Laboratory emphasis is on culturing, identification, aseptic technique and basic immunological assays. Credits: 4, Hours: (3/2/0/0), Prereq: One year of recent high school biology/chemistry with a grade of B or higher is strongly recommended, or completion of Basic Biological Concepts or other college-level biology course; Arts & Sciences Elective Code: A

BIO-189 Microbes and Society (3)
Explores microorganisms and how they have influenced human affairs and the environment. Through lectures, assigned readings, educational films, slides, tapes and discussions students explore the power of selected microorganisms, how they influenced history, demography, fashion, the arts, the economy and, of course, individual lives. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BIO-190 Introductory Biotechnology (3)
Explores biotechnology and its impact on science and society. Includes basic biological principles, biotech product development, agricultural and medical applications of biotechnology and potential careers. Intended for liberal arts students interested in biotechnology and those interested in the Biotechnology AAS degree. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BIO-195 Human Evolution (3)
Considers biological evaluations and applications to the history of the human species. Hypotheses and theories concerning the origins of the earth, life, levels of life, the human species and races are examined. Topics include primate classification and relationships, human evolution, anthropological and archeological techniques, the evolution of prehistoric culture, and human migration into North America. Concept-building subject areas include genetic, evolution and paleontology principles. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BIO-249 Biotechnology Internship (1-3)
Provides practical experience in the field of biotechnology. Students who have completed most or all of their course work in the biotechnology program are given the opportunity to acquire work-related skills through a cooperative effort with local biotechnology companies. Credits: 3, Hours: (0/0/0/12), Prereq: BIO-147, CHM-175; Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

BIO-400 Lab Methodology (3)
Emphasizes basic laboratory techniques commonly used in the biotechnology field. Includes properly collecting data, making laboratory measurements, preparing solutions and using laboratory instruments. Covers quality control and assurance, and biosafety issues such as bloodborne pathogen training and interpretation of MSDS literature. Lab included. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

BIO-410 Molecular Biology Techniques I (4)
Introduces modern molecular biology techniques utilizing nucleic acids (DNA and RNA). Includes nucleic acid purification, quantitation, cloning and restriction enzyme digests. Advanced techniques include Southern and Northern analysis, polymerase chain reaction (PCR), real-time PCR and DNA sequencing. Stresses proficiency in techniques and proper analysis of results. Lab included. Credits: 4, Hours: (1/6/0/0), Arts & Sciences Elective Code: B

BIO-420 Molecular Biology Techniques II (4)
Introduces modern molecular techniques utilizing biomolecules, emphasizing proteins. Explores basic techniques in protein expression, protein purification, and protein analysis including Western blot analysis. Includes complex techniques relating to biomolecule separation. These methods include a variety of chromatographic methods including: paper, thin layer, gel permeation, gas and high performance liquid chromatography. Students interpret chromatographic results and practice documentation and reporting skills. Lab included. Credits: 4, Hours: (1/6/0/0), Prereq: BIO-410; Arts & Sciences Elective Code: B; Comments;

BIO-430 Molecular Genetics (3)
Introduces the fundamental concepts of genetics. Focuses primarily on the modern discoveries of molecular biology and their applications in today's world; however, basic principles of classical (Mendelian) genetics are also discussed. Topics include DNA structure and analysis, DNA replication, transcription, translation, cell cycle regulation with regard to cancer, recombinant DNA technology, genomics, and proteomics. Credits: 3, Hours: (3/0/0/0), Coreq: BIO-410; Arts & Sciences Elective Code: B; Comments: Lab not included. Students apply lab skills in Molecular Techniques I and Molecular Techniques II.

BIO-450 Basic Bioinformatics (3)
Introduces bioinformatics concepts and practice. Includes biological databases, sequence alignment, gene and protein structure prediction, molecular phylogenetics, genomics and proteomics. Emphasizes practical experience with bioinformatics tools, development of basic skills in the collection and presentation of bioinformatics data, as well as basic programming in a scripting language. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-190; Coreq: BIO-410; Arts & Sciences Elective Code: B

BIO-500 Biological Agents of Terrorism (2)
Addresses the potential for release, expected epidemiology/etiology, detection, response protocols and potential outcomes of a major biological event. Information presented is also applicable to accidental and naturally-occurring major

events. Credits: 2; Hours (2/0/0/0); Arts & Sciences Elective Code: A; Comments: One year of high school biology/chemistry or BIO-186 Microbiology

BIO-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Course may be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

BIO-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (0/2/0/0), Prereq: BIO-104 or BIO-112 or BIO-113 or BIO-168 or BIO-173 or BIO-186; Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

BUS: Business

BUS-102 Introduction to Business (3)
Focuses on American and global business and introduces the student to each primary facet of operating a business. This course will help the student understand economic, social and political influences that affect business success. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BUS-146 Small Business Planning Strategies (3)
Learn strategies for small business through the development of a business plan and studying successful small businesses. This course incorporates finance, marketing, sales, organizational structure, and strategic management and decision making. Credits: 3, Hours: (3/0/0/0), Prereq: MGT-300, MKT-297, FIN-123; Arts & Sciences Elective Code: B

BUS-151 Introduction to E-Commerce (3)
Introduces the infrastructure and components necessary for a successful e-commerce website in the context of business, payment, security, legal and privacy issues. Includes the basic concepts, tools and techniques of Web Analytics and search engine optimization needed to begin promoting a website and evaluating its success. Includes shopping cart systems, issue tracking and analytics. Credits: 3, Hours: (2/2/0/0), Prereq: BCA-290, MKT-110; Arts & Sciences Elective Code: A

BUS-161 Human Relations (3)
Explores the psychological principles of human behavior, helping students understand themselves and others in the workplace. This course is adapted to students' needs and interests depending on their overall degree programs. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

BUS-178 How to Deliver Winning Presentations (1)
How to organize and present public speaking topics. Participants learn to use visual aids, outlines and agendas to complement their presentations. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

BUS-182 Introduction to Law (3)
Introduces the student to the broad spectrum of the involvement of business in customary business law topics. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BUS-185 Business Law I (3)
Surveys the general source of law and structure of the American legal system. Students learn basic principles of tort law, administrative law, constitutional law and contract law with an emphasis on business applications. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

BUS-190 Professionalism: BPA (1)
Develops and recognizes leadership and teamwork utilizing a student professional organization, Business Professionals of America (BPA). Special emphasis is placed on leadership development activities. Students are provided the opportunity to participate in state and national business competitions, earn awards, perform community service and seek local, state and national office. This course may be repeated for credit. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

BUS-191 Professionalism: SIFE (1)
Develops and recognizes leadership and team building skills of students seeking to make a difference in business and impact the world. Students In Free Enterprise (SIFE) members earn awards and scholarships by developing, leading and engaging in projects designed to positively impact their local, regional, national and international communities. Develops skills to help students gain a competitive edge in the professional world by participating in regional and national competitions, and networking with local, national and international organizations. This course may be repeated for 1 or 2 credit hours. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

BUS-192 Professionalism: DECA (1)
Develops and recognizes leadership and teamwork utilizing a student professional organization, Delta Epsilon Chi Association (DECA). Special emphasis is placed on leadership development activities. Students are provided the opportunity to participate in state and national business competitions, earn awards, perform community service and seek local, state and national office. This course may be repeated for credit. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

BUS-223 Perspectives in International Studies (3)
Explores comparative differences between the student's country and another country with emphasis in a discipline of study. Topics include history, geography, culture, food, language and discipline-specific topics. Reviews international travel guidelines. Includes a study tour with additional fees for travel. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

BUS-280 Fundamentals of Lean Process Improvement (3)
Focuses on learning and practicing Lean methods of minimizing waste, increasing efficiency and improving quality within organizations. Provides basic understanding and practical applications of organization techniques (5S), Lean mapping tools, streamlining work processes and problem-solving methodologies (A3). Concludes with a comprehensive capstone project using real-world Lean applications. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

BUS-290 Employment Search and Workplace Success (1)
Provides students with an understanding of the job-seeking process including resumes and interviews. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

BUS-294 Business Administration Capstone (1)
Serves as a capstone for Business Administration majors. Students develop a leadership/employment portfolio to demonstrate achievement of program goals. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

BUS-908 Cooperative Education (1-6)
For arts and sciences students: Offers a learning experience in a structured work situation related to a student's major academic interest. May be repeated for credit. Credits: 1, Hours: (0/0/0/4), Arts & Sciences Elective Code: A

BUS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

BUS-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

BUS-932 Internship (0.5-9)
Provides an opportunity to receive experience through on-the-job training in an approved business establishment. Valuable learning experiences are structured by the program coordinator and the training sponsor. Credits: 0.5-9, Hours: (0/0/0/2-36), Arts & Sciences Elective Code: A

BUS-949 Special Topics (1-3)
Offers a learning experience in conjunction with a structured work situation. Instruction and readings relate to and supplement the particular job experience. Credits: 1-3, Hours: (0/0/0/4-12), Coreq: BUS-908; Arts & Sciences Elective Code: A

CAD: Computer Aided Drafting

CAD-105 CAD I (2)
Provides instruction in entry-level CAD (computer-aided design) skills. Students learn basic commands, CAD hardware and applications, and complete 2-D drawings with AutoCAD on IBM computers. Students should be familiar with

keyboards. Credits: 2, Hours: (1/2/0/0), Prereq: CSC-110 or IND-155; Arts & Sciences Elective Code: B; Comments: Drafting, mathematics or practical blueprint reading experience required

CAD-106 CAD II (3)
Provides advanced instruction in CAD (computer-aided design). Students learn to use complex commands, animation, 3-D drawing, interface CAD with other programs, modify menus, write simple programs, and set up CAD stations with AutoCAD on IBM computers. Credits: 3, Hours: (1/4/0/0), Prereq: CAD-105; Arts & Sciences Elective Code: B; Comments: Previous AutoCAD experience required

CAD-140 Parametric Solid Modeling I (3)
Provides parametric 3-D solid modeling experience using industry-standard software. Covers modeling operations including creating extrusions, cuts, holes, sweeps, blends and revolutions. Basic operations for creating drawings and assemblies are also covered. The software platform utilized shall be Inventor. Credits: 3, Hours: (2/2/0/0), Prereq: CAD-105; Arts & Sciences Elective Code: B

CAD-141 Parametric Solid Modeling II (3)
Provides students experience with parametric 3-D solid modeling using industry standard software. Students learn modeling operations including creating extrusions, cuts, holes, sweeps, blends and revolutions. Basic operations for creating drawings and assemblies are also covered. The software platform utilized shall be Pro E. Credits: 3, Hours: (2/2/0/0), Prereq: IND-155 or CSC-110; Arts & Sciences Elective Code: B

CAD-200 CAD SoftPlan (3)
Introduces object based CAD programs and the process involved in generating a complete set of working drawings. Emphasizes drawing set up, file management, architectural information organization, attention to detail, converting sketches to CAD, modifying CAD drawings and applying problem-solving skills. Credits: 3, Hours: (3/0/0/0), Prereq: ARC-112 and CON-116, and either IND-155 or CSC-110; Arts & Sciences Elective Code: B

CAD-201 CAD REVIT (3)
Introduces a building information modeling CAD program and the process involved in generating a complete set of working drawings. Emphasizes drawing set up, file management, architectural information organization, attention to detail, converting sketches to CAD, modifying CAD drawings and applying problem-solving skills. Credits: 3, Hours: (3/0/0/0), Prereq: ARC-112 and CON-116, and either CSC-110 or IND-155; Arts & Sciences Elective Code: B

CAD-202 Architectural CAD Residential (3)
Presents guided, step-by-step instruction for incorporating CAD into the generation of a complete set of residential working drawings. Focuses on the proper use of basic and advanced CAD skills, organizing information to generate CAD drawings and interpretation of hand drawings to CAD. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

CAD-204 Architectural CAD Commercial (6)
Explores further the processes involved in generating a complete set of commercial working drawings. Explores correct computer usage, code research, blueprint redline and revision, and appropriate graphic representation. Teamwork is also emphasized. Credits: 6, Hours: (2/8/0/0), Prereq: CAD-202; Arts & Sciences Elective Code: B

CAD-206 Architectural CAD Project (6)
Enables the student to develop a set of working drawings on CAD for a commercial project located on the Kirkwood campus. Focuses on correct computer usage, code research, blueprint redline and revision, and appropriate graphic representation. Teamwork is also emphasized. Credits: 6, Hours: (2/8/0/0), Prereq: CAD-204; Arts & Sciences Elective Code: B

CAD-230 Geometric Dimensioning and Tolerancing (2)
Introduces the special symbols used on mechanical drawings. Geometric dimensioning and tolerancing is a means of specifying engineering design and drawing requirements with respect to actual function and relationship of part features. It is a technique that ensures the most economical and effective production of these features for fabrication and inspection. Credits: 2, Hours: (1/2/0/0), Prereq: DRF-142, DRF-143; Arts & Sciences Elective Code: B

CAD-300 AutoCAD for Applied Engineering (2)
Provides instruction in entry-level two-dimensional mechanical CAD drawing creation and editing, program customization, CAD standards, file manipulation/translation, and library creation/usage. Emphasizes mechanical drawings. Discusses basic computer hardware, software and operating systems. Students should be familiar with keyboarding and microcomputer applications. Credits: 2, Hours: (1/2/0/0), Prereq: CSC-110 or IND-155; Arts & Sciences Elective Code: B; Comments: Drafting, mathematics or practical blueprint reading experience required

CAD-310 Inventor for Applied Engineering (1)
Provides parametric 3-D solid modeling experience using the software platform Inventor. Covers the basic operations for creating drawings and assemblies. Emphasizes modeling operations, including creating extrusions, cuts, holes, sweeps, blends and revolutions. Credits: 1, Hours: (.5/1/0/0), Prereq: CSC-110 or IND-155; Arts & Sciences Elective Code: B; Comments: Drafting, mathematics or practical blueprint reading experience required

CAD-320 Parametric Solid Modeling III (2)
Expands ProE software skills learned in Parametric Solid Modeling II. Emphasizes advanced software features typically encountered in the design manufacturing workplace. Includes modeling in assembly mode, sheet metal, family tables, Mapkeys and introductory FEA. Credits: 2, Hours: (1/2/0/0), Prereq: CAD-141; Arts & Sciences Elective Code: B

CAD-400 AutoCAD for Architecture (3)
Provides instruction in two- and three-dimensional architectural CAD drawing creation and editing, program customization, CAD standards, file manipulation/translation, and library creation/usage. Discusses basic computer hardware, software and operating systems. Credits: 3, Hours: (3/0/0/0), Prereq: CSC-110 or IND-155, CON-116 and ARC-112; Arts & Sciences Elective Code: B

CAD-805 CAD Projects (1-3)
Provides for individualized learning under guidance of an appropriate instructor. Application of advanced CAD techniques to a project relative to the student's specific career or field of study. Credits: 1-3, Hours: (0/2/0/0), Prereq: CAD-105, CAD-106; Arts & Sciences Elective Code: B

CAD-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

CAD-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

CHM: Chemistry

CHM-110 Introduction to Chemistry (3)
Introduces chemistry to those with little or no previous background in chemistry and is preparatory for further course work in chemistry including Intro to Organic & Biochemistry for Nursing students. The course includes a study of chemical structure and bonding, measurements, periodic table, nuclear chemistry weight/volume relationships in chemical reactions, and solution chemistry. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: The lab is optional.

CHM-111 Introduction to Chemistry Laboratory (1)
Laboratory to accompany CHM-110. Credits: 1, Hours: (0/2/0/0), Coreq: CHM-110; Arts & Sciences Elective Code: A

CHM-132 Introduction to Organic and Biochemistry (4)
Introduces structure, nomenclature and reactions in organic chemistry as well as the study of life processes including carbohydrate, protein, lipid, nucleic acid metabolism and the interrelationships involved. Credits: 4, Hours: (3/2/0/0), Prereq: CHM-110; Arts & Sciences Elective Code: A; Comments: One year of high school chemistry recommended

CHM-165 General Chemistry I (4)
Studies the basic principles of inorganic chemistry with emphasis on such concepts as measurements and problem solving, chemical reactions and equations, stoichiometry, atomic structure and nuclear chemistry, periodicity, chemical bonding, kinetic molecular theory and gas laws, and the structure and properties of matter. Credits: 4, Hours: (3/2/0/0), Prereq: CHM-110, MAT-102 or MAT-138; Arts & Sciences Elective Code: A

CHM-175 General Chemistry II (4)
Studies colligative properties along with thermodynamics and kinetics, chemical equilibrium, electrochemistry, acids, bases and complex ions, and an introduction to organic chemistry. Credits: 4, Hours: (3/2/0/0), Prereq: CHM-165; Arts & Sciences Elective Code: A

CHM-262 Organic Chemistry I (4.5)
Introduces the theory and practice of organic chemistry with emphasis on the chemistry of functional groups. Areas stressed are nomenclature, stereoisomerism, chemical bonding, reaction mechanisms, the characterization of hydrocarbons, alkyl halides and alcohols. The laboratory stresses development of appropriate organic chemistry separation, isolation and synthetic techniques. Credits: 4.5, Hours: (3/3/0/0), Prereq: CHM-175; Arts & Sciences Elective Code: A

CHM-272 Organic Chemistry II (4.5)
Continues the study of ethers, aldehydes, ketones, carboxylic acids and their derivatives, amines and biologically important fats, proteins and carbohydrates. Stresses qualitative organic analysis and spectroscopic methods. Credits: 4.5, Hours: (3/3/0/0), Prereq: CHM-262; Arts & Sciences Elective Code: A

CHM-280 Quantitative Analysis (4)
Introduces methods of chemical analysis stressing gravimetric, volumetric, spectrophotometric and selected electroanalytical methods. Emphasis is placed on fundamentals of measurement, treatment of data and error analysis. Credits: 4, Hours: (2/4/0/0), Prereq: CHM-175; Arts & Sciences Elective Code: A

CHM-500 Chemical Agents of Terrorism (2)
Addresses the chemistry, environmental effects, physiological effects and potential outcomes of a major chemical event from an all-hazards approach to homeland security. Information presented is also applicable to accidental and naturally-occurring major events. Credits: 2; Hours (2/0/0/0); Arts & Sciences Elective Code: A; Comments: One year of high school chemistry

CHM-510 Monitoring for and Detection of Terrorist Agents (2)
Addresses the applicability of current technology for the detection of biological, chemical and radiological agents following a major homeland security event. Information presented is also applicable to accidental and naturally-occurring major events. Credits: 2; Hours (2/0/0/0); Arts & Sciences Elective Code: A; Comments: One year each of high school biology and chemistry

CHM-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean.

CHM-928 Independent Study (1-1.5)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1-1.5, Hours: (0/2-3/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean.

CIS: Computer Information Systems

CIS-121 Introduction to Programming Logic (3)
Introduces students to basic computer programming ideas and foundational principles such as problem decomposition and step-wise refinement. Explores problem solving using well-developed programming logic derived with pseudo code, flow charts and related techniques. Focuses on translating student developed solutions into simple programs for testing using an instructor-selected, high-level programming or scripting language. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

CIS-126 Introduction to Programming Logic With Language (4)
Introduces beginning programming students to basic computer programming concepts. Covers principles of program logic and design using both procedural and object-oriented techniques. Students design, code and test computer programs using well-structured programming logic. Credits: 4, Hours: (3/2/0/0), Coreq: MAT-062; Arts & Sciences Elective Code: A

CIS-128 Programming Concepts (3)
Introduces computer programming, including the technical aspects of designing and coding computer programs to accomplish business objectives, and how this technology fits into companies' overall information systems needs. Explores application software development and explains basic programming logic structures, facilitating successful designing, coding and testing. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

CIS-135 Microcomputer Operating Systems (3)
Introduces and familiarizes students with a variety of PC-based operating systems. The systems include DOS, Windows, UNIX and LINUX. The respective strengths of the operating environments are reviewed, along with the approaches used in providing systems management and software development support capabilities. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

CIS-153 Data Structures (4)
Extends skills and competencies acquired in Intro to C. The C++ language is introduced as an enhanced and extended version of C. Structures and arrays are utilized to implement abstract data types in conjunction with a variety of model problems. This will be used as a basis for introducing classes, class construction and object-oriented programming. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: A

CIS-168 Introduction to C (4)
Covers developing programs in the C programming language. Topics include: lifetime and scope of variables; operators, R-values and L-values; arrays and pointers; complex data structures and file processing; use of library functions in the Microsoft software development environment. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: B

CIS-169 C# Programming (3)
Introduces Microsoft's new object-oriented programming language and newest programming toolset, Visual Studio 2005. Focuses on developing dynamic, customized desktop applications. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: B

CIS-172 Java (4)
Provides an introduction to object-oriented program and design concepts using the Java programming language. Intended for students without previous object-oriented programming experience. The course covers methods, classes and objects with emphasis on modularity and code reusability. Students code, test, and debug simple applets and applications illustrating understanding of conditionals, iteration, array handling, event processing, string handling, and input-output. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: A

CIS-176 Java II (4)
Continues Java. This course covers such topics as advanced GUI, exception handling, multithreading, multimedia, files and streams, networking, and data structures. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-172, and either CIS-332 or CIS-307; Arts & Sciences Elective Code: A

CIS-180 J2EE Servlets and JSP (4)
Provides practical application of server-side development using servlets and Java server pages (JSP). This course is intended for developers already familiar with the Java programming language. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-176; Arts & Sciences Elective Code: B

CIS-181 Java III (3)
Provides practical application of server-side Java development. Emphasizes meeting business needs, through database integration, web and Internet services, servlets and Java server pages (JSP). Explores developing client software and web interfaces for mobile devices. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-176; Arts & Sciences Elective Code: B

CIS-190 Internet Programming I (4)
Introduces the student to basic Web page development tools, including HTML markup language and JavaScript scripting language. The student uses text editors to build Web pages that include tables, forms, frames and lists. Students learn to use scripting language to add dynamic functionality and user interaction to a Web page. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: B

CIS-192 Internet Programming II (4)
Develops Web-server scripting for dynamic Web page production. Covers Active Server Pages (ASP v3), XML and ASP.NET technologies. Builds on database design and SQL syntax skills acquired in prerequisite courses. Knowledge of VB.NET is necessary. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-190, CIS-333; Arts & Sciences Elective Code: B

CIS-207 Fundamentals of Web Programming (3)
Presents hypertext markup language and cascading style sheets for encoding Web pages. Introduces Server Side Includes and simple JavaScript for enhancing them. Emphasizes a structured approach to page layout, coding and styling, exposing students to a variety of software tools. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

CIS-280 Client Side Scripting (3)
Covers practical Web client script programming in depth. Emphasizes JavaScript and DOM scripting, but other topics, including the use and modifica-

tion of open-source scripts and script libraries, are also explored. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-207 and CIS-126, or CIS-128; Arts & Sciences Elective Code: B

CIS-285 ASP.NET with Visual Basic (3)
Provides a practical introduction to the development of websites and Web services with ASP.NET, Visual Basic and related tools. Focuses on multi-tier business Web applications. Working knowledge of SQL, Visual Basic and the Visual Studio IDE required. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-610; Arts & Sciences Elective Code: B

CIS-307 Introduction to Databases (3)
Introduces students to database concepts and different software applications used in database management. Covers the design of tables and forms for data entry in a relational database management system. Students maintain the data and design inquiries to produce information for decision making, data analysis and integration with other software applications. Credits: 3, Hours: (2/2/0/0), Prereq: CSC-110; Arts & Sciences Elective Code: A

CIS-325 Data Management (4)
Presents concepts and techniques of the various data access methods used on the mainframe. Storage methods presented include Sequential, Direct, PDS and Virtual Storage Access Methods (VSAM). Topics include VSAM file concepts, catalog concepts, JCL for VSAM, Access Methods Services, performance considerations, recovery facilities, security and application programming in COBOL using VSAM files. This includes file creation, retrieval, deletion, dumps, sequential and random master file updates, variable length records and alternate indexes. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-413; Arts & Sciences Elective Code: B

CIS-332 Database and SQL (3)
Covers SQL programming and relational database design. Includes entity-relationship diagrams, table normalization and database documentation. Emphasizes writing simple and complex queries for a variety of tasks. Includes other topics related to T-SQL, replication, OLAP, creating and testing stored procedures, triggers, security, and tuning. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-121; Arts & Sciences Elective Code: B

CIS-333 Database and SQL (4)
Covers programming for the SQL server relational database environment. Some of the topics include T-SQL, joining tables, creating and altering SQL server tables, replication, OLAP, creating and testing stored procedures, triggers, security, and tuning. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: A

CIS-334 PHP/Apache/MySQL (3)
Introduces PHP, Apache and MySQL open source technologies used to create dynamic, database-driven Web applications. Students create MySQL databases and use server-side scripting language (PHP) to write applications that interact with the database through Apache Web server technology. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-207, and CIS-126 or CIS-128, and CIS-307 or CIS-333; Arts & Sciences Elective Code: B

CIS-342 PHP/Apache/MySQL II (3)
Continues instruction on PHP programming language for building Web-based structure. Focuses on the object-oriented method of the PHP programming language as students create reusable assets and modular systems for use on a Web site project. Emphasizes SQL query knowledge and application. Develops knowledge of Apache Web server management through work with a local Apache server. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-334; Arts & Sciences Elective Code: B

CIS-403 COBOL I (4)
Presents ANSI COBOL programming language fundamentals and coding techniques. This course includes the writing of COBOL programs using structured techniques. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: B

CIS-413 COBOL II (4)
Presents ANSI COBOL programming language fundamentals and coding techniques. Includes writing structured COBOL, file editing, control breaks, sorting, sequential master file update. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-403; Arts & Sciences Elective Code: B

CIS-480 Intro to Mainframe Programming (2)
Covers basic operation of mainframe terminals and emulation software. Intended to make students self-sufficient in navigating the TSO environment, and in preparing programs and test data. Provides a basic introduction to JCL and COBOL. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

CIS-504 Structured Systems Analysis (3)
Covers the foundational aspects of system analysis and design, and the role of the systems analyst in a business information systems environment. Teaches the tools, techniques and methodologies used to analyze and design information systems and produce technical solutions for companies' information technology needs. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-121, and CIS-332 or CIS-307; Arts & Sciences Elective Code: B

CIS-570 Introduction to iSeries eServer (2)
An overview of IBM application system/400 architecture and facilities. Topics include operating system concepts and introduction to control language, menu structure, system displays, creation and maintenance of logical and physical files, and data base organization and access. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

CIS-609 Visual Basic.NET (4)
Introduces the Microsoft .NET architecture, the Visual Studio IDE and object-oriented programming with VB.NET. Students build stand-alone projects with an emphasis on graphical interfaces using WinForm components. Addresses the use of OOD/OOP desktop applications as front-ends for database access via ADO. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-126; Arts & Sciences Elective Code: A

CIS-610 Advanced Visual Basic.NET (4)
Extends students' knowledge of Visual Basic.NET and its use in database-backed, Web-centric applications. ADO.NET, ASP.NET, Web Services and Web Forms technologies are covered, in particular their roles in building n-tier applications. Credits: 4, Hours: (3/2/0/0), Prereq: CIS-609, CIS-333; Arts & Sciences Elective Code: B

CIS-622 .NET Programming I (3)
Introduces the Microsoft .NET architecture, the Visual Studio IDE and object-oriented programming with .NET. Emphasizes building stand-alone desktop projects with graphical user interfaces using WinForm components. Focuses on applying the principles of programming and problem solving within an object-based design and event-driven paradigm. Includes interface design, using common libraries and features of the common language runtime. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-121; Arts & Sciences Elective Code: B

CIS-624 .NET Programming II (3)
Extends students' knowledge of Microsoft .NET and related tools. Emphasizes the use of SQL and ADO.NET for the creation of stand-alone and distributed database applications to solve common business problems. Covers issues related to n-tier design, network communications, error handling and the production of flexible database reports. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-622, and either CIS-332 or CIS-307; Arts & Sciences Elective Code: B

CIS-626 .NET Programming III (3)
Provides a practical introduction to Internet programming with Microsoft .NET. Emphasizes development of websites and web services with ASP.NET and related tools. Focuses on creating multi-tier business web applications. Includes basic ASP.NET web controls and script integration, along with server-side issues such as authentication, state management and database connectivity. Credits: 3, Hours: (2/2/0/0), Prereq: CIS-624; Arts & Sciences Elective Code: B

CIS-802 PC Programming Projects (4)
Allows the students to apply the knowledge learned in a number of programming courses, including C, Visual Basic, C++ and Java. This course also requires application of knowledge gained from programming design and systems analysis classes in the analysis, design, scheduling and implementation of a complete systems development effort. This course should be taken in the student's final semester. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: B

CIS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

CIS-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

CLS: Cultural Studies

CLS-125 Language and Society (3)
Introduces basic sociolinguistic principles. Practices methods for discovering and describing socially significant language behavior. Explores correlations between social and linguistic behavior. Analyzes the educational and political im-

plications of sociolinguistic findings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-140 Understanding Cultures: The Mideast (3)
Examines in a cross-cultural context the politics, economics, history, ethnic groups, religions and cultures of the Mideast from Morocco to Afghanistan and Pakistan. Includes study of all aspects of the Arab/Israeli conflict. Students also acquire an understanding of nationalism, tribalism and energy issues in a global context. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-151 Understanding Cultures: Latin America (3)
Examines human spatial and cultural behavior in Latin America by exploring political, economic, religious and social institutions. Theoretical readings are balanced with case studies to enable students to explore theoretical perspectives in a cross-cultural context. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-159 Understanding Cultures: Indigenous Central America (3)
Explores the ethnographic, political, economic and historical contexts of contemporary indigenous life in Central America, with particular emphasis on the indigenous people of Guatemala and Mexico. While contemporary culture is the main focus of the course, students also explore the themes of continuity and change from pre-Hispanic times to the present. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-162 Understanding Cultures: Pacific Societies (3)
Examines human spatial and cultural behavior in Pacific Island countries by exploring political, economic, religious and social institutions. Theoretical readings are balanced with case studies to enable students to explore theoretical perspectives in a cross-cultural context. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-165 Understanding Cultures: Modern Japan (3)
Begins with a survey of Japanese history and culture to the Meijl Restoration of 1868. Emphasis is on the borrowing and blending of Chinese culture with Japanese culture, dating back to the Tang dynasty in China. Students focus on the Japanese adaptation to the challenges of modernization, with emphasis on accommodating industry and modern systems of government within a traditional Japanese cultural system. Issues include the relationship with China, World War II and the economic expansion of Japan from 1945 to the present. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-167 Understanding Cultures: Modern China (3)
Focuses on the 19th and 20th centuries, a period of confusion, violence and chaos, during which China has undergone a dramatic revolution. Compares how ancient China struggled to adopt the most useful practices of the western enlightenment while keeping its unique identity. Explores this struggle by examining geography, philosophy of Confucianism, and religious and political practices. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-171 Understanding Cultures: Sub-Saharan Africa (3)
Examines the geography, history, economics, social relations, health issues, urbanization, religion and literature of Sub-Saharan Africa. Considers the development of Africa prior to colonization, the impact of colonization, issues facing Africans since independence, and contemporary challenges and opportunities. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-180 American Pluralism (3)
Examines the pluralistic nature of American communities through a critical analysis of the history, literature and culture of one or more of the following cultural groups: African Americans, Asian Americans, European Americans, Hispanic Americans or Native Americans. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-190 Culture and Technology (3)
Introduces students to the relationships between technology and culture through an interdisciplinary study of the humanities. The course examines these relationships through works in the humanities, for example art, literature, music, philosophy, religion, history, film and anthropology. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-192 Communication and Culture (3)
Examines the implications and impacts of various communication media, especially modern ones, on human culture and society. Using tools of historical and cultural studies, as well as the interpretive methods of the humanities, students will explore, for example, how new communications media affect interpersonal relations, self concept, democracy, experiences of space/time and human creativity. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-200 International Study (1-12)
Provides students with the opportunity to pursue studies in such areas as history, art, politics, music, literature, foreign language and occupational program areas. Credits: 1-12, Hours: (1-12/0/0/0), Arts & Sciences Elective Code: A

CLS-211 Cultures in Transition: Central Europe (3)
Introduces participants to Eastern Europe, particularly to the Czech Republic and Slovakia. Analyzes the geographic setting, environmental problems, the livelihoods and the people of the nation. Provides an overview for students just beginning to study the region. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CLS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project learning contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

CLS-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

COM: Communication

COM-222 Communication for Health Care Professionals (3)
Introduces the theories and skills used to analyze and understand communication variables affecting human relationships, such as personal perception, feedback, idea development and nonverbal cues. Builds competencies and skills relevant to various interpersonal contexts within health care settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

COM-710 Basic Communications (3)
Provides an opportunity for students to improve English language skills. The principles of English grammar, punctuation and style are studied. Emphasis is placed on correct grammar usage, spelling, vocabulary and proofreading/editing skills for the office professional. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-013; Arts & Sciences Elective Code: B

COM-723 Workplace Communications (3)
Emphasizes practical application of theories and principles to develop writing skills essential to encounters in contexts of occupational communications. Includes writing business letters, resumes, memos, instructional materials and reports, and using visual aids, taught through a blend of formal lectures and student participation. Offered for students enrolled in Applied Science and Technology programs. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

COM-744 Oral Communication in the Workplace (3)
Emphasizes the practical application of theories and principles to the development of presentation skills essential to communication encounters in contexts of occupational communications. Helps students become confident presenters by focusing on the preparation and delivery of various workplace presentations. Offered for students in Applied Science and Technology programs. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

COM-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

COM-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

COM-945 Selected Topics (1-3)
Topic selection will include; e.g., communication apprehension, video performance practice, gender communication, family communication, creative problem solving, nonverbal communication,

persuasion and propaganda, intercultural communication, listening skills, dysfunctional communication patterns and rhetorical analysis. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: A

CON: Construction

CON-108 Construction Safety (1)
Provides instruction on construction industry safety and health topics for entry-level workers. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

CON-116 Architectural Plans and Specs (2)
Introduces the skills and methods for understanding and interpreting construction drawings and technical specifications for residential and commercial buildings. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

CON-134 Surveying and Site Layout (2)
Provides class and laboratory activities to gain knowledge in the use of conventional and laser instruments, building site layout, site investigation, leveling, topographic maps and route surveying. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

CON-190 Residential Construction (3)
Provides introductory lab experience in tool and equipment use, basic residential construction procedures and safety for those with little or no construction experience. Includes foundation systems, floor systems, basic wall construction, roof systems, electrical layout and theory, heating and air handling basics, and plumbing systems. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

CON-272 Commercial Construction (3)
Provides introductory lab experience in tool and equipment use, and basic commercial construction procedures. Focuses on safety and foundational elements in a variety of systems. Hands-on lab activities include foundations, floor and wall systems, concrete, masonry, plumbing, HVAC and electrical. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

CON-273 Carpentry Lab I (6)
Introduces the tools and terminology used in basic framing and gives students hands-on framing instruction. Focuses on frame walls, windows, doors and other standard structures. Emphasizes correct materials and methods. Credits: 6, Hours: (3/6/0/0), Arts & Sciences Elective Code: B

CON-274 Carpentry Lab II (8)
Continues Carpentry Lab I. Explores the uses of modern construction materials, correct tool usage, accuracy and techniques in a hands-on lab. Continues strengthening basic carpentry skills, then expands to incorporate layout, framing, concrete form building, complex roof structures, stair building, metal stud framing and basic interior trim. Credits: 8, Hours: (4/8/0/0), Prereq: CON-273; Arts & Sciences Elective Code: B

CON-275 Stone Concepts (2)
Provides introductory hands-on skills in the tools, preparation and application of the most commonly used stone products in this area, including Anamosa and Indiana Limestone as well as a variety of man-made stone and rubble. Students develop skills in handling, forming and laying all types of stone and in proper patterns. Included in this course is a historical overview of the ancient art of stone masonry and field trips to stone mines. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

CON-311 Building Construction Systems I (3)
Introduces the materials, methods and terminology used in modern construction. Focuses on general knowledge in a broad range of systems and the coordination requirements between those systems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: A classroom-based discussion course that includes field trips to construction sites

CON-312 Building Construction Systems II - Carpentry (2)
Continues the study of materials, methods and terminology used in modern construction. Focuses especially on mechanical, electrical, and plumbing systems and their coordination with other systems. Also studies the use of charts and tables to evaluate system requirements. Credits: 3, Hours: (3/0/0/0), Prereq: CON-311; Arts & Sciences Elective Code: B

CON-313 Building Construction Systems II (3)
Continues the study of materials, methods and terminology used in modern construction. Focuses especially on mechanical, electrical, and plumbing systems and their coordination with other systems. Also studies the use of charts and tables to evaluate system requirements. Credits: 3, Hours: (3/0/0/0), Prereq: CON-311; Arts & Sciences Elective Code: B

CON-316 Sustainable Construction Science (3)
Provides an understanding of building science theory and applications in residential and commercial construction. Sustainable design issues such as climate, environment, durability, air and moisture transfer are discussed. Students apply knowledge to traditional building methods as well as newer technologies of construction. Students gain knowledge and resources beneficial to future certifications in LEED, Energy Star and many others. Credits: 3, Hours: (1/0/0/0), Prereq: CON-313; Arts & Sciences Elective Code: B

CON-320 Construction Computer Applications (2)
Provides an overview of software used in construction, particularly software used for estimating, scheduling and job costing. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: A

CON-321 Residential Estimating (2)
Introduces the basic principles and skills necessary to develop estimates for residential projects. Concentrates on calculating material and labor quantities. Introduces techniques for pricing. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: A

CON-323 Light Commercial Estimating (3)
Introduces the basic principles and skills needed to develop a complete estimate for light commercial construction projects. Uses spreadsheets and interactive estimating software. Credits: 3, Hours: (3/0/0/0), Prereq: CON-321; Arts & Sciences Elective Code: A

CON-324 Commercial Estimating (3)
Introduces the basic principles and skills needed to develop a complete estimate for commercial construction projects. Uses spreadsheets and interactive estimating software. Credits: 3, Hours: (3/0/0/0), Prereq: CON-321; Arts & Sciences Elective Code: A

CON-328 Construction Law and Ethics (3)
Introduces construction law and construction contract documents and their legal consequences on the owner, contractor, A/E and subcontractor with an emphasis on the AIA documents. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CON-329 Construction Management (3)
Introduces the functions of construction management related to financial management, labor relations, material and equipment control, business methods, and risk management. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CON-330 Construction Management Applications (3)
Provides the student an opportunity to develop a solution to a class experience. A contract between the instructor and student is developed to outline assignments to be completed. Credits: 3, Hours: (0/6/0/0), Arts & Sciences Elective Code: A

CON-331 Construction Materials Science (3)
Applies mathematical processes and formulas to perform complex calculations for loads, states of stress, forces, movement, levers, moment, stability and equilibrium as they apply to residential and commercial building design and construction practices. Credits: 3, Hours: (3/0/0/0), Prereq: CON-116, MAT-716; Arts & Sciences Elective Code: B; Comments: All first-year courses or permission of instructor

CON-335 Construction Planning and Scheduling (2)
Covers class and laboratory activities to control the flow of materials, manpower and equipment on a construction project, with a major emphasis on CPM schedule preparation and monitoring. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A; Comments: All first-year courses or permission of instructor

CON-355 Industrial Framing and Contruction (3)
Covers job site/shop safety, construction guidelines and theory, print reading, footing layout and construction, floor systems, basic wall construction, and roof framing layout and calculations. Emphasizes concepts and theory through laboratory exercises and lecture. Credits: 3, Hours: (2/2/0/0), Prereq: MAT-109; Arts & Sciences Elective Code: B

CON-390 Construction Capstone (3)
Introduces the functions of project management in the construction industry. Studies the phases of projects, including defining, planning, executing and closing. Focuses on teamwork, leadership, and problem solving. Credits: 3, Hours: (3/0/0/0), Prereq: CON-335; Arts & Sciences Elective Code: B

CON-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guid-

ance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

CON-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

CON-930 Construction Health and Safety Certificate (1-3)
Provides basic training and professional certifications in construction related workplace health and safety. Credits: 1-3, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

CON-932 Internship (1-6)
Provides full-time work in an approved, construction-related position that includes instructor visitations/evaluations and employer evaluations of performance. Students gain experience in planning and production monitoring. Credits: 1-6, Hours: (0/0/0/4), Arts & Sciences Elective Code: B; Comments: All first-year courses or permission of instructor

CRJ: Criminal Justice

CRJ-100 Introduction to Criminal Justice (3)
Provides an overview of the American criminal justice system and examines the process of justice administration through the agencies of law enforcement, courts and corrections. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CRJ-101 Ethics in Criminal Justice (3)
Examines the ethical considerations facing the criminal justice practitioner. Includes determining moral behavior, developing moral and ethical behavior, ethics and law enforcement, ethics and the courts, ethics and corrections, policy and management issues, professionalism, pride and ethics for practitioners. Credits: 3, Hours: (3/0/0/0), Coreq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-111 Police and Society (3)
Examines police as part of society's official control apparatus. A theory-based course which utilizes a multiple causation model to explain police issues, integrating six core elements: history, role, socialization, culture, function and experience. Students study police history, police role and organization, the making of a police officer, police behavior, stress, the delivery of effective police services and the future of law enforcement. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CRJ-112 History of Police in America (3)
Traces the development of the police officer and the police organization from the colonial period to modern times. Investigates problems encountered during various periods of development of American police agencies. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-120 Introduction to Corrections (3)
Examines the history, theories and practices of penal institutions, both adult and juvenile. Additionally explores penal reform in relation to various objectives of modern penology. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-130 Criminal Law (3)
Reviews the historical development of criminal law and the resulting philosophy of law that has developed. The law-making process, with the societal and political influences, is examined and discussed. Comparisons of common law with contemporary law are analyzed in an attempt to determine what impact historical events and societal changes have had in bringing about change. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CRJ-133 Constitutional Criminal Procedure (3)
Studies the development of fundamental principles in constitutional law, integrating a case-by-case study of United States Supreme Court decisions and a broad examination of the judicial legal processes. Coverage includes the nature of judicial review, powers of the Supreme Court, president, Congress and federalism. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-134 Applications of Criminal Law (3)
Examines the Iowa Code as it relates to both the criminal code and the vehicle code. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-136 Correctional Law (3)
Explores current statutory and case law pertinent to correctional concepts, facilities and related topics. Examines major legal issues: incarceration, probation, parole, restitution, pardon, restoration of rights and related topics. Students identify and discuss legal issues which directly affect correctional systems and personnel. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-141 Criminal Investigation (3)
Presents the basic principles of investigation, both public and private, including: examination of the scene, collecting physical evidence, interrogations and interviews, sketching a scene, report writing, and basic photography. Special methods of investigating certain crimes are explored, and the function of the crime laboratory discussed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

CRJ-200 Criminology (3)
Surveys the nature, causes and extent of crime and delinquency; major consideration is given to various explanations from numerous disciplines. Credits: 3, Hours: (3/0/0/0), Prereq: SOC-110; Arts & Sciences Elective Code: A

CRJ-201 Juvenile Delinquency (3)
Analyzes the various components of delinquency: home, school, peer group and community structure. Explores the role of therapeutic and detention centers and the juvenile court, as well as approaches to prevention and treatment. Credits: 3, Hours: (3/0/0/0), Prereq: SOC-110; Arts & Sciences Elective Code: A

CRJ-202 Cultural Awareness for Criminal Justice Practitioners (3)
Expands the student's awareness of both cognitive knowledge and skills necessary to interact effectively with and serve culturally diverse populations. Emphasizes attitudes, competencies, and behavioral issues in interracial and cross-cultural contacts between criminal justice practitioners and a diverse citizenry. Sociological frameworks allow for examination of diversity with respect to race, ethnicity, gender, sexual orientation, poverty, religion, age, disability and language minorities. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100, SOC-110; Arts & Sciences Elective Code: A

CRJ-212 Community-Oriented Policing (3)
Examines the philosophy of community-oriented policing including specific programs and principles. This course explores the police departments' interaction with various segments of the community. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-202; Arts & Sciences Elective Code: A; Comments: Permission of program coordinator

CRJ-220 Community-Based Corrections (3)
Studies the principles and practice of corrections as applied in the community setting. Includes examination of theories of corrections that apply to the correctional practices of parole and probation. Also explores alternative treatment programs utilized in community halfway houses, alternative jails and outpatient facilities. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-222 Correctional Treatment Methods (3)
Examines the history, evolution and development of correctional treatment in the United States and presents an overview of the strategies and various protocols that are used in the rehabilitation and counseling of juvenile and adult criminal offenders who are incarcerated, or assigned to residential facilities through judicial referrals. Institutional and non-institutional programs are reviewed and treatment models discussed. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-120; Arts & Sciences Elective Code: A

CRJ-230 Evidence (3)
Studies the kinds and degrees of evidence and the rules governing the admissibility of evidence in court. Credits: 3, Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-232 Community-Oriented Policing and Problem Solving (3)
Utilizes community-oriented policing philosophy and problem-oriented policing methods. Emphasizes active research into crime patterns, to explain them in terms of environmental influences and develop strategies to prevent and/or control crime problems. Credits: 3, Hours: (3/0/0/0), Coreq: CRJ-133; Arts & Sciences Elective Code: A

CRJ-244 Traffic Collision Investigation (3)
Examines the development, purpose and organization of the vehicle code, supervision and control of traffic, selective enforcement procedures, and accident prevention and investigation. Also examines the purposes and analysis of accident statistics, report writing, and courtroom presentations for prosecution of violators. Credits: 3,

Hours: (3/0/0/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRJ-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

CRJ-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

CRJ-932 Internship (1-6)
Provides placement in a criminal justice agency in a student capacity. Work experience in an agency under supervision of professionals in the field permits students to learn what career opportunities are offered. Credits: 1, Hours: (0/0/3/0), Prereq: CRJ-100; Arts & Sciences Elective Code: A

CRR: Collision Repair/Refinishing

CRR-338 Introduction to Metalworking (3)
Provides the beginning technician with shop safety and general introductory knowledge and procedures used in metalworking. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

CRR-342 Metalworking II (4)
Continues Metalworking I with students working in the lab on actual autos. Covers most work situations found in auto body repair shops. Credits: 4, Hours: (0.5/7/0/0), Prereq: CRR-820; Arts & Sciences Elective Code: B

CRR-344 Metalworking III (4)
Continues Metalworking II with students working in the lab on actual autos. Covers most work situations found in auto body repair shops. Credits: 4, Hours: (1/6/0/0), Prereq: CRR-342; Arts & Sciences Elective Code: B

CRR-515 Collision Health and Safety Certificate (2)
Provides basic training and professional certifications in collision repair workplace health and safety. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

CRR-545 Body Straightening and Painting (7)
Emphasizes quality of work and speed of repair. Students learn estimating and total auto rebuilding using frame-straightening equipment. Provides practical application with an emphasis on appearance, completion of work in time schedules, material cost, striping, molding installation and proper procedures without instructor help. Credits: 7, Hours: (1/12/0/0), Prereq: CRR-344; Arts & Sciences Elective Code: B

CRR-803 Introduction to Refinishing (3)
Provides the beginning technician with shop safety, health issues, and general introductory knowledge and procedures used in painting. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

CRR-820 Metalworking and Refinishing Practices (3)
Covers general body construction along with body alignment and general metal techniques with emphasis on use of body fill material. Provides an overview of glass and trim replacement and also the relationship between body and frame components. Introduces spot matching techniques and spraying complete autos. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

CRR-830 Metalworking and Refinishing I (3)
Continues CRR-820. Lab activities cover general body construction along with body alignment and metal techniques on the use of fill material. Covers an in-depth analysis of glass and trim replacement and the relationship between body and frame components. The course also covers spot painting and matching techniques in addition to spraying complete autos. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

CRR-833 Refinishing II (3)
Continues Metalworking and Refinishing I with an emphasis on working with actual autos. Students practice additional spot painting and matching techniques as well as spraying complete autos. Credits: 3, Hours: (0.5/5/0/0), Prereq: CRR-830; Arts & Sciences Elective Code: B

CRR-837 Refinishing III (3)
Continues Refinishing II with an emphasis on the finer points of refinishing. Students develop skills in two-tones, tape striping, blemish troubleshooting, blending, matching, touch-ups and professional quality gun handling. Credits: 3, Hours: (1/4/0/0), Prereq: CRR-833; Arts & Sciences Elective Code: B

CRR-932 Internship (1-3)
Focuses on providing the student practical experience in a collision repair related work environment. Includes employer/supervisor evaluations and instructor visits/interview. Credits: 1-3, Hours: (0/0/0/4-12), Arts & Sciences Elective Code: B

CSC: Computer Science

CSC-110 Introduction to Computers (3)
Familiarizes the student with business, personal and industrial uses of microcomputers. Broad-based overview of microcomputer topics is presented; concepts of storage media, file organization and data representation are also presented. The fundamentals of computer problem solving and programming are discussed. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

CSC-142 Computer Science (4)
Introduces computer programming including data types, expressions, input/output, control structures, functional and object-oriented programming, and simple data structures. The course emphasizes problem-solving skills through program refinement, documentation and programming style. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-102; Arts & Sciences Elective Code: A

CSC-153 Data Structures (4)
Continues the study of program design and construction begun in CSC-142. The course emphasizes topics in data structures and practice in their specification, design, implementation and use. Topics include container classes, arrays, lists, stacks, queues, trees, graphs, algorithm analysis, object-oriented programming, data abstraction, and searching and sorting techniques. Credits: 4, Hours: (4/0/0/0), Prereq: CSC-142 or CIS-176; Arts & Sciences Elective Code: A

CSC-160 Software Design and Development (4)
Building on the foundation of basic programming skills acquired in CSC-142, this course emphasizes the design and development of software systems. Topics include user interface programming, graphics and multimedia, networking and concurrency. Long-term projects provide students with experience developing software over an extended time period. Students also gain a general understanding of computer and system organization. Credits: 4, Hours: (4/0/0/0), Prereq: CSC-142; Arts & Sciences Elective Code: A

CSC-175 Computer Organization and Assembly Language Programming (4)
Emphasizes the organization and operation of computer systems at the assembly-language level. The mapping of statements and constructs in a high-level language onto sequences of machine instructions is studied, as well as the internal representation of simple data types and structures. Programming practice with an assembly language provides practical application of concepts presented in class. Credits: 4, Hours: (4/0/0/0), Prereq: CSC-142; Arts & Sciences Elective Code: A

CSC-924 Honors Project (1)
Allows qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

CSC-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

DAN: Dance

DAN-110 Fundamentals of Modern Dance (1.5)
Introduces basic modern dance technique and choreography. Students practice standard movements, and locomotor patterns are introduced to creative concepts. May be repeated for credit. Credits: 1.5, Hours: (0/3/0/0), Arts & Sciences Elective Code: A

DAN-120 Fundamentals of Jazz Dance (1.5)
Develops modern jazz dance technique and choreography. Students are introduced to the history and concepts of the jazz idiom and practice standard and creative jazz movements and locomotor patterns. May be repeated for credit. Credits: 1.5, Hours: (0/3/0/0), Arts & Sciences Elective Code: A

DAN-130 Ballet (1.5)
Introduces classical ballet technique. Students explore the basic history of ballet. Additionally, students learn the principles and terminology of

ballet while striving for a kinesthetic understanding of the art form. May be repeated for credit. Credits: 1.5, Hours: (0/3/0/0), Arts & Sciences Elective Code: A

DAN-140 Fundamentals of Tap (1.5)
Develops modern tap technique and choreography. Students are introduced to the history and concepts of the tap idiom and practice standard and creative tap movements and locomotor patterns. May be repeated for credit. Credits: 1.5, Hours: (0/3/0/0), Arts & Sciences Elective Code: A

DAN-170 Repertoire and Ensemble (1.5)
Covers the role a dancer has in the process of making a new choreographic work for the stage. This process involves exploration, group collaboration, and finally interpretation. In addition, the dancers learn to understand the level of commitment and consciousness required of them throughout the rehearsal period. Credits: 1.5, Hours: (0/3/0/0), Arts & Sciences Elective Code: A

DAN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DAN-928 Independent Study (1.5)
Allows students to continue to develop abilities in modern and/or jazz dance technique. May be taken more than once. Credits: 1.5, Hours: (0/3/0/0), Prereq: DAN-110 and/or DAN-120; Arts & Sciences Elective Code: A

DEA: Dental Assistant

DEA-285 Oral Pathology for Dental Assisting (1)
Introduction to the general principles of pathology. Emphasis is on the specifics of disease entities of local and systemic origin to enable interpretation by the dental auxiliary of the medical and dental history with emphasis on specifics of oral pathology. Terminology is a focus, with descriptions of oral lesions and their treatment. Credits: 1, Hours: (1/0/0/0), Prereq: DEN-120, DEN-130; Arts & Sciences Elective Code: B

DEA-403 Dental Materials (3)
Introduces students to materials utilized in the dental field. Includes handling and preparation of specific materials. Prepares students for clinical procedures. Combines the science of the basic dental materials with manipulative practice. Credits: 3, Hours: (1.5/3/0/0), Arts & Sciences Elective Code: B

DEA-404 Dental Materials (3.5)
Introduces students to materials utilized in the dental field. Includes handling and preparation of specific materials. Prepares students for clinical procedures. Combines the science of the basic dental materials with manipulative practice. Credits: 3.5, Hours: (2/3/0/0), Prereq: DEA-517, DEN-100, DEN-120; Arts & Sciences Elective Code: B

DEA-517 Dental Assisting I (3.5)
Learn basic principles of dental assisting including fundamental chair-side concepts and techniques, team delivery systems, and intra-oral skills. Credits: 3.5, Hours: (2/3/0/0), Coreq: DEA-404, DEN-100, DEN-120, DEN-130, HSC-107, HSC-210; Arts & Sciences Elective Code: B

DEA-518 Dental Assisting II (1.5)
Learn principles of dental assisting with focus on intra-oral skill obtainment, sterilization processes and pharmacology. Credits: 1.5, Hours: (1/1/0/0), Prereq: DEA-517; Coreq: DEN-200; Arts & Sciences Elective Code: B

DEA-519 Dental Assisting III (1.5)
Learn principles of dental assisting with a focus on expanded functions, occlusal registrations, gingival retraction, final impressions, temporary restorations, cavity liners, bases, desensitizing agents and bonding. Credits: 1.5, Hours: (0.5/2/0/0), Prereq: DEA-518; Arts & Sciences Elective Code: B

DEA-580 Dental Assisting Clinic I (4)
Acquire technical skills from clinical experiences by applying theoretical concepts in general and specialty dentistry areas at the University of Iowa College of Dentistry, Veterans Medical Center in Iowa City, and in private dental office settings. Credits: 4, Hours: (0.5/0/10.5/0), Prereq: DEA-404, DEA-517, DEN-100, DEN-120, DEN-130, DEN-200, HSC-210, HSC-107; Coreq: DEA-518, DEA-610, DEN-300; Arts & Sciences Elective Code: B

DEA-581 Dental Assisting Clinic II (4.5)
Comprehensive application of dental assisting skills in the private dental office setting. Credits: 4.5, Hours: (1/0/10.5/0), Prereq: DEA-580, DEN-200; Arts & Sciences Elective Code: B

DEA-610 Specialty Dentistry (4.5)
Presents the specialty areas of dentistry including: endodontics, periodontics, orthodontics, oral surgery, pediatric dentistry and geriatric dentistry. Includes procedures, instruments and current concepts for assisting in these areas. Includes expanded functions: dry socket medication, periodontal dressings and pulp vitality testing. Also includes psychological considerations in dentistry. Credits: 4.5, Hours: (4/1/0/0), Prereq: DEA-517, DEN-100, DEN-120, DEN-130; Arts & Sciences Elective Code: B

DEA-702 Dental Office Procedures (2)
Learn dental office related functions including: computer operations, telephone, recall systems, resumes, supply inventory, filing, record keeping, financial arrangements, patient accounts, credit and collection, banking, salaries, tax forms, patient correspondence, and legal and ethical conduct. Credits: 2, Hours: (2/0/0/0), Prereq: DEN-100, DEN-120; Arts & Sciences Elective Code: B

DEA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DEA-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

DEN: Dental

DEN-100 Fundamentals of Dentistry (3.5)
Provides the foundations of knowledge necessary to begin a study in the dental field. Introduction to instrumentation, dental specialties and special needs patients are discussed. Introductory oral hygiene instruction and basic radiography are provided. Credits: 3.5, Hours: (2/3/0/0), Coreq: HSC-107, HSC-210, DEN-120, DEN-130; Arts & Sciences Elective Code: B

DEN-110 Dental Terminology (2)
Enlists a comprehensive study of dental terminology for dental program preparation, career entry or review. Explains the composition of dental terms by exploring prefix, root combination and suffix divisions. Discusses common dental procedures, practices and disease processes. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

DEN-120 Dental Anatomy (3)
Introduces students to basics of embryology, histology, terms and anatomy of the oral cavity including a detailed study of crown and root morphology of both primary and permanent dentition. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

DEN-130 Head and Neck Anatomy (1.5)
Utilizes a systems approach to the gross anatomy of the head and neck with emphasis on the maxilla, mandible, oral tissues, neuromuscular and circulatory function, supporting structures and the temporomandibular joint. Credits: 1.5, Hours: (1/1/0/0), Arts & Sciences Elective Code: B

DEN-150 Dental Emergencies (0.5)
Provides an overview of emergencies common to the dental office setting. Students gain knowledge in emergency drugs, allergic reactions and drug-related emergencies. Also emphasized are specific medical conditions related to treatment. Credits: 0.5, Hours: (0.5/0/0/0), Prereq: DEN-100, DEN-120, DEN-130; Arts & Sciences Elective Code: B

DEN-200 Preventive Dentistry (2)
Provides an introduction to dental disease, the causes and methods for prevention. An intense focus on dental caries and preliminary information on periodontal disease. Students learn to utilize patient assessment techniques and provide oral health information. Credits: 2, Hours: (1.5/1/0/0), Coreq: DEN-120, DEN-130; Arts & Sciences Elective Code: B

DEN-220 Dental Nutrition (1)
Study of the role of diet upon oral structures and application of the role of dietary analysis to the treatment plan of a dental patient. Emphasis is placed on analysis of the complete diet and preventive recommendations. Credits: 1, Hours: (1/0/0/0), Prereq: DEN-120, DEN-130; Coreq: DEN-200; Arts & Sciences Elective Code: B

DEN-300 Dental Radiography (3)
Provides students with principles and techniques of dental radiography. Students receive practical experience on manikins and selected patients. Credits: 3, Hours: (2/2/0/0), Prereq: DEN-100, DEN-120, DEN-130; Arts & Sciences Elective Code: B

DEN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DEN-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

DHY: Dental Hygiene

DHY-134 Therapeutics and Pain Control (2)
Provides students with knowledge of chemotherapeutics used in dentistry and the mechanisms of drugs in the body. Students are then able to understand manifestations of drug administration in dental treatment. Credits: 2, Hours: (2/0/0/0), Prereq: DHY-285; Arts & Sciences Elective Code: B

DHY-140 General and Oral Pathology (2)
An introduction to the general principles of pathology for dental hygienists with emphasis on specifics of oral pathology; building upon and applying biomedical science knowledge to the diagnosis and treatment of oral and maxillofacial diseases. Terminology is a main focus throughout the course. Credits: 2, Hours: (2/0/0/0), Prereq: DEN-120, DEN-130, DEN-300, DHY-186; Arts & Sciences Elective Code: B

DHY-173 Dental Hygiene I (4)
Provides an introduction to the clinical portion of the dental profession. Emphasis is on skills necessary for preliminary patient care including health histories, basic instrumentation, and legal and ethical issues. Manikin and patient practice are utilized. Credits: 4, Hours: (2/0/6/0), Arts & Sciences Elective Code: B

DHY-186 Dental Hygiene II (4)
Provides experience in the application of dental hygiene techniques on a variety of patients in a clinical setting, Clinical experience includes oral prophylaxis, fluoride therapy and oral physiotherapy. Didactic training encompasses new clinical skills, assessment, treatment planning and effective communication skills. Credits: 4, Hours: (2/0/6/0), Prereq: DHY-173; Arts & Sciences Elective Code: B

DHY-211 Periodontology (2)
Introduction to the aspects of periodontal disease, the disease process and management of periodontal patients. Emphasis is placed on periodontal instrument techniques and surgery as performed by the dentist. Credits: 2, Hours: (2/0/0/0), Prereq: DEN-120, DEN-200; Arts & Sciences Elective Code: B

DHY-220 Dental Materials (1.5)
Introduces students to materials utilized in the dental field. Includes handling and preparation of specific materials. Prepares students for clinical procedures to be performed on patients. Credits: 1.5, Hours: (1/1/0/0), Prereq: DEN-100, DEN-120; Arts & Sciences Elective Code: B

DHY-250 Community Dental Health (1.5)
Provides concepts of health education and promotion, community dental health, and public health dentistry with an emphasis on assessment, planning, implementation and evaluation of community oral health promotion. Credits: 1.5, Hours: (1/1/0/0), Prereq: DEN-100, DEN-200, DHY-285; Arts & Sciences Elective Code: B

DHY-270 Local Anesthesia for the Dental Hygienist (1)
Learn basic concepts for safe and effective administration of local anesthesia, including hands-on preparation in techniques used in the practice of administering local anesthesia. Credits: 1, Hours: (0.5/1/0/0), Prereq: DEN-120, DEN-130; Arts & Sciences Elective Code: B

DHY-285 Dental Hygiene III (3)
Emphasis on treatment of patients with moderate dental disease, continued application of diagnostic information and treatment planning by student. Credits: 3, Hours: (1/0/6/0), Prereq: DHY-186; Arts & Sciences Elective Code: B

DHY-296 Dental Hygiene IV (5)
Provides continued development of oral prophylaxis skills. Emphasis is placed on accessory treatment, outside of a routine prophylactic appointment, and on aided scaling procedures. Credits: 5, Hours: (1/0/12/0), Prereq: DHY-285; Arts & Sciences Elective Code: B

DHY-306 Dental Hygiene V (5)
Prepares students for transition to practice. Board preparation material, credentialing, advanced instrumentation and accessory procedure techniques are taught. Current trends in the dental field are discussed. Credits: 5, Hours: (1/0/12/0), Prereq: DHY-296; Arts & Sciences Elective Code: B

DHY-910 Dental Hygiene Clinical Enrichment (1)
Provides focused reinforcement in the clinical portion of the dental hygiene profession, with emphasis placed on skills necessary for patient care. Content includes basic instrumentation and instruction in radiographic techniques. Manikin and patient practice are utilized for learning experience. Successful completion of this course fulfills the requirement to re-enter the second year of the Dental Hygiene program at Kirkwood or the remediation requirement for a clinical board examination. Credits: 1, Hours: (0/0/3/0), Prereq: DHY-173, DHY-186; Arts & Sciences Elective Code: B

DHY-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DLT: Dental Lab Technology

DLT-152 DLT Oral Anatomy (1)
Study of the anatomical and physiological features, structures and function of the human head that must be considered in the fabrication of dental prostheses. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

DLT-156 Dental Anatomy Lab (2)
Includes waxing of dental tooth surfaces on a stone cast that introduces the basic concepts of occlusion. Credits: 2, Hours: (0/4/0/0), Coreq: DEN-120; Arts & Sciences Elective Code: B

DLT-250 Foundation of Dental Technology (3)
Orients the student to dental technology including infection control, equipment operation, and health and safety. Applies numerous physiochemical principles to the study and manipulations of basic dental materials. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

DLT-251 Introduction to Dentures (5)
Introduction to the fabrication of complete dentures including procedures, equipment and the materials required to replace natural dentition and the associated structures of the maxilla and mandible. Also includes complete denture repairing, relining and rebasing. Credits: 5, Hours: (2/6/0/0), Coreq: DEN-120, DLT-152, DLT-156, DLT-250, DLT-565; Arts & Sciences Elective Code: B

DLT-253 Introduction to Partial Dentures (5)
Applies the basic principles for removable partial denture framework fabrication including classification, components, surveying, designing, waxing, investing, casting and finishing. Credits: 5, Hours: (2/6/0/0), Prereq: DLT-152, DLT-251, DLT-565; Arts & Sciences Elective Code: B

DLT-254 Introduction to Crown and Bridge (5)
Applies techniques of model preparation, articulation and laboratory procedures for construction of full-cast crowns, inlays and bridges. Credits: 5, Hours: (2/6/0/0), Prereq: DEN-120, DLT-152, DLT-156, DLT-250, DLT-565; Arts & Sciences Elective Code: B

DLT-350 Fixed Dental Prosthodontics (5)
Advanced fabrication of ceramics and crown/bridge prosthesis to include, but not limited to, multiple unit bridges, acid etch, post and core using porcelain systems to match natural dentition. Credits: 5, Hours: (2/6/0/0), Prereq: DLT-254, DLT-456; Arts & Sciences Elective Code: B

DLT-351 Removable Dental Prosthodontics (5)
Advanced fabrication of complete dentures and partial prosthesis to include intra-oral gothic arch tracings, articulation of teeth in bilateral balanced occlusion, immediate dentures, characteristics and staining techniques, identification in denture bases and fluid resins. Credits: 5, Hours: (2/6/0/0), Prereq: DLT-251, DLT-253; Arts & Sciences Elective Code: B

DLT-352 Dental Technology Industry (3)
Includes ethics, jurisprudence, history, certification and dental organizations. Studies the establishment and operation of a dental laboratory,

including market surveying, bookkeeping, cost analysis, design and understanding human behavior from a supervisor's point of view. Credits: 3, Hours: (3/0/0/0), Prereq: DLT-250; Arts & Sciences Elective Code: B

DLT-445 Orthodontics (3)
Identifies malocclusion classifications and incorporates the study of orthodontic materials and use of equipment into the fabrication of basic orthodontic appliances. Credits: 3, Hours: (1/4/0/0), Prereq: DEN-120, DLT-152, DLT-156, DLT-250, DLT-565; Arts & Sciences Elective Code: B

DLT-450 Advanced Orthodontics (8)
Comprehensive application of orthodontic and pedodontic appliance fabrication. Emphasizes quality, productivity, specific techniques and procedures, and the ability to interpret work authorizations. Students gain practical experience in a commercial dental laboratory. Credits: 8, Hours: (2/0/18/0), Prereq: DLT-445; Arts & Sciences Elective Code: B

DLT-451 Advanced Fixed Dental Prosthodontics (12)
Comprehensive application of porcelain and crown/bridge prosthesis to include, but not limited to, stress-breaker, telescopic, and laminates using techniques and modifications of porcelain systems to match natural dentition in a variety of situations. Students gain practical experience in a commercial dental laboratory. Credits: 12, Hours: (2/4/24/0), Prereq: DLT-350; Arts & Sciences Elective Code: B

DLT-452 Adv Removable Dental Prosthodontics (12)
Comprehensive application of complete and partial prostheses. Includes overdentures, lingualized occlusion, biomechanical design principles, specific concepts, stress equalizers, quality and productivity improvement and work authorization interpretation. Students gain practical experience in a commercial dental laboratory. Credits: 12, Hours: (2/4/24/0), Prereq: DLT-351; Arts & Sciences Elective Code: B

DLT-456 Introduction to Ceramics (5)
Fabrication of porcelain fused to metal prosthesis to include framework design considerations, porcelain characteristics and limitations, equipment and materials required to replace natural dentition. Credits: 5, Hours: (2/6/0/0), Prereq: DLT-254; Arts & Sciences Elective Code: B

DLT-565 Occlusion (2)
In-depth study of the principles of occlusion and their application to fabrication of dental prosthesis. Credits: 2, Hours: (1/2/0/0), Coreq: DEN-120, DLT-152; Arts & Sciences Elective Code: B

DLT-851 DLT Clinic I (1)
Assigns each student to clinical areas to gain practical experience relating to instructional and manipulative skills provided in the classroom. Credits: 1, Hours: (0/0/3/0), Prereq: DLT-251, DLT-253, DLT-254, DLT-456; Arts & Sciences Elective Code: B

DLT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DLT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

DRA: Film And Theatre

DRA-101 Introduction to Theatre (3)
Requires no previous experience. Introduces the student to the roles of actor, director, designer, playwright and critic, and provides a brief history of the art. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DRA-116 Film Analysis (3)
Focuses on the methods and technologies of film art. The emphasis is on analysis of classic narrative films. Subjects for analysis include narrative structure, segmentation, shot-by-shot breakdown, elements of mise-en-scene and montage, auteurs, genres, production considerations, and conventions. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DRA-117 Film Topics (3)
Offers in-depth study of various topics in film studies. Some topics offered are the study of genre theory, specific genres, film adaptation of literature and drama, moral themes and documentary film. All film topics will study the relationship between the topic and culture, identify operating principles and relevant contextual forces, and apply these concepts to the study of specific films. Course may be repeated for credit. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DRA-125 Introduction to Play Analysis (3)
Focuses on the reading, discussion, interpretation and analysis of dramatic texts. It is the aim of this course to provide a concentrated study of beginning play analysis through discussion and written analysis. Students gain an understanding of the important role that dramatic analysis plays when mounting a production in the theatre. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DRA-130 Acting I (3)
Introduces basic acting techniques with emphasis on improvisation, concentration and self-analysis. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DRA-132 Acting II (3)
Continues training in basic acting techniques with emphasis on creating characters in scripted scenes. Students present individual and group scenes. Credits: 3, Hours: (3/0/0/0), Prereq: DRA-130; Arts & Sciences Elective Code: A

DRA-162 Technical Theatre (3)
Provides information on and experience with the materials, tools, equipment, and techniques of manual drafting, scenery construction and painting, stage lighting, costuming, and make-up. Hands-on experience with each of the areas of study is emphasized. Students are required to work on the technical aspects for one Kirkwood production. The course is designed to produce students who have a working knowledge of the basic techniques of producing a live performance. The course is open to all students. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

DRA-163 Technical Theatre (4)
Provides information on and experience with the materials, tools, equipment, and techniques of manual drafting, scenery construction and painting, stage lighting, costuming, and make-up. Hands-on experience with each of the areas of study is emphasized. Students are required to work on the technical aspects for one Kirkwood production. The course is designed to produce students who have a working knowledge of the basic techniques of producing a live performance. The course is open to all students. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: A

DRA-172 Technical Theatre Lab (1)
Provides students credit for work as technicians in one Kirkwood production. A minimum of 24 hours of practical work is required for a passing grade. May be repeated up to six times. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

DRA-200 Introduction to Design for the Theatre (3)
Introduces the language and process of design as applied to theatre. Explores studio applications of elements and principles of design to theatre-specific rendering techniques and design projects. Credits: 3, Hours: (2/2/0/0), Prereq: DRA-162; Arts & Sciences Elective Code: A

DRA-230 Acting Lab (1)
Provides students credit for work as actors in one Kirkwood production. A minimum of 24 hours of practical work is required for a passing grade. May be repeated up to six times. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

DRA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DRA-928 Independent Study (1-3)
Allows the student to do readings, papers, research and/or production work under the guidance of a theatre faculty member. Independent study contract required. Credits: 1-3, Hours: (0/2-6/0/0), Arts & Sciences Elective Code: A

DRF: Drafting

DRF-141 Engineering Drawings (2)
Introduces the fundamentals of drafting such as lettering, line quality, orthographic projection, isometric drawing, detail drawing, basic plan drawing, dimensioning and scale reading. Students are familiarized with the tools and tech-

niques of the trade. Emphasis is on developing accuracy, line quality, graphic ability and lettering control. The different assignments focus on skills required in the profession. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

DRF-142 Engineering Design I (3)
Allows students to gain an understanding of drawing mechanical parts used in design. Problem-solving approach is used to work out problems on the drafting board, resulting in a final drawing. Topics selected are: instrument instruction, lettering, geometric construction, sketching, multiview projection, sectional views, calculating weight of a mechanical part, auxiliary views, isometrics, obliques, weld symbols, threads and fasteners, dimensioning and tolerancing. Credits: 3, Hours: (1/4/0/0), Prereq: DRF-141; Arts & Sciences Elective Code: B

DRF-143 Engineering Design II (3)
Introduces the student to special topics in drafting: gears, structural drawing, pipe drawing. A major portion of the semester involves doing an engineering project. The project requires assembly drawings, weld complete, details, bill of materials and weight calculations. This project requires a comprehensive review of the drafting course. Students are also required to do work on the computer. Credits: 3, Hours: (1/4/0/0), Prereq: DRF-142; Arts & Sciences Elective Code: B

DRF-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DRF-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

DSL: Diesel

DSL-143 Fundamentals of Electricity (3)
Covers introduction to electricity, i.e. voltage, amperage and resistance with emphasis on Ohm's Law and its practical application. Meter fundamentals are covered. Series, parallel and series-parallel circuits are studied. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

DSL-156 Truck Electronics (3)
Continues the basic electrical coverage of DSL-143 with an additional emphasis on the types of electrical circuits and subassemblies found in most trucks. Students learn interior and exterior lighting, steering column, dash, wiper motors, temperature controls, power locks and windows, and on-board computers. Credits: 3, Hours: (2/2/0/0), Prereq: DSL-143; Arts & Sciences Elective Code: B

DSL-308 Cooling Systems (2)
Introduces the student to truck cooling systems. The principles of cooling systems and the standard components of cooling systems are examined. Testing and servicing of cooling systems from a truck perspective are explained. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

DSL-345 Truck Engines (3)
Covers the introduction to diesel engines commonly used in the trucking industry. The design of engine components and subassemblies is examined with emphasis on the reasons certain design features are used. Correct procedures for testing and servicing truck engines are explained and demonstrated. Credits: 3, Hours: (2/2/0/0), Prereq: DSL-355; Arts & Sciences Elective Code: B

DSL-355 Fundamentals of Internal Combustion Engines (3)
Covers fundamentals of two- and four-stroke engine operation, servicing and adjustment. Learning activities concentrate on proper disassembly, measuring and reassembly of actual engines. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

DSL-424 EFI Engine Systems (4)
Provides a thorough explanation and hands-on experience in the theory, operation, diagnosis, maintenance and repair of electronic fuel injected diesel engines. Learning activities include the use of testing equipment used to diagnose EFI engines. Lab activities are designed to reinforce the understanding of the operation and maintenance of these engines. Credits: 4, Hours: (2/4/0/0), Prereq: DSL-143, DSL-345, DSL-355; Arts & Sciences Elective Code: B

DSL-543 Truck Clutches (3)
Introduces students to the testing and servicing of clutches found on most trucks. Learning activities include examining, servicing and replacement of clutches. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

DSL-630 Air Brakes and ABS (2)
Covers a basic introduction to air brakes and anti-locking braking systems. Learning activities concentrate on theory, operation, diagnosis, maintenance, and repair of air and anti-lock brakes found on diesel trucks. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

DSL-642 Steering and Suspension (2)
Includes theory and operation of steering components and servicing. Students learn theory and operation of air ride and spring suspension components on light and heavy duty trucks. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

DSL-802 Trailer Servicing (3)
Involves servicing and minor repair to semi tractor and truck trailers. Learning activities include electrical, power train, brakes, air conditioning and tune-up. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B; Comments: Completion of first-year technical courses.

DSL-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DSL-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

DSV: Disability Services

DSV-100 Introduction to Disabilities Services (3)
Examines the values, skills and issues of working with people with disabilities in educational, vocational and residential settings. Students visit agencies and complete volunteer experiences at community sites. This course meets part of the requirement for the Iowa Paraeducator Generalist Certification. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DSV-101 Beginning Braille (2)
Develops the skills needed to support Braille learners. Topics include the philosophy of Braille, using Braille, making adaptations and using technology. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

DSV-106 Paraeducator Skills (1)
Focuses on specific issues related to working as a paraeducator including: health, safety, and emergency procedures and policies; knowledge in content areas of reading, writing and math and adapting instructional strategies and materials in these content areas; supporting the need of children who are considered "at risk"; working effectively with families; integrating the use of technology; and discussing ethical and professional standards issues. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

DSV-120 Observation and Management of Behavior (3)
Develops skills of observation and management of the behavior of others individually and in groups. Students develop strategies for helping others to manage their own behavior. This course meets part of the requirement for the Iowa Paraeducator Generalist Certification. May be repeated one time for credit with permission of coordinator. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DSV-130 Instruction and Adaptation Strategies (3)
Develops the skills to facilitate the mainstreaming of students with disabilities and work with gifted and talented students in school settings. Students taking the course learn strategies for instructing diverse groups of learners and adapting curriculum and materials. The course includes an overview of the special education system and the evolving relationship with regular education. Issues related to adults with disabilities are discussed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

DSV-200 Exceptional Persons (3)
Studies the educational, cultural, and social aspects of children and adults who are exceptional in the context of mental, emotional and physical development. Includes discussion of gifted and talented children in schools. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111; Arts & Sciences Elective Code: A

DSV-250 Culturally and Linguistically Diverse Children (3)
Prepares staff to work with culturally and linguistically diverse children, including English language learners, those with language disorders, deaf and hard of hearing students. Includes use of technology, instructional methodology, appropriate translation and interpretation procedures, and communication with team members. Participants work collaboratively and individually to develop projects. Credits: 3, Hours: (3/0/0/0), Prereq: DSV-100 & DSV-120, or EDU-110 & DSV-120, or ITP-252 & PSY-121; Arts & Sciences Elective Code: A

DSV-280 Career and Transition Services (3)
Studies issues related to career and transition programs for children receiving special education services in K-12 programs and for adults with disabilities. Addresses issues of self-determination; career assessment; transition to employment, independent living, and post-secondary education; behavior support; and interagency collaboration. Includes the role of the paraeducator in transition settings and the job coach in supported employment settings. Credits: 3, Hours: (3/0/0/0), Prereq: DSV-100 & DSV-120, or EDU-110 & DSV-120; Arts & Sciences Elective Code: A

DSV-285 Career and Transition Services Field Experience and Seminar (3)
Places the student in a supported employment setting working as a job coach. Students develop specific objectives related to program competencies. Biweekly seminars are held to assess progress and student experiences. Credits: 3, Hours: (1/0/6/0), Prereq: DSV-100, DSV-280; Arts & Sciences Elective Code: A

DSV-290 Disabilities Services Careers Field Experience and Seminar (3-6)
Places the student in two settings (educational, vocational or residential) which serve people with disabilities. Students develop specific objectives related to program competencies. Students meet in seminars to assess progress and discuss student experiences. Credits: 3, Hours: (1.5/0/4.5/0), Prereq: DSV-100, PSY-111, DSV-110 or DSV-120 or DSV-130; Arts & Sciences Elective Code: A

DSV-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

DSV-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

ECE: Early Childhood Education

ECE-103 Introduction to Early Childhood Education (3)
Gives students a historical and philosophical foundation of the field of early childhood education. Includes an overview of assessment and evidence-based practices. Addresses the influences of family centered practice, inclusion, culture and language. Explores early childhood careers. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECE-133 Child Health, Safety and Nutrition (3)
Focuses on evidence-based concepts in the fields of health, safety and nutrition and their relationship to the growth and development of the young child ages birth to eight. Blends current theory with problem solving, practical applications and assessments. Includes collaboration with families and assesses the role of culture, language and ability on health, safety and nutrition decisions in early childhood settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECE-158 Early Childhood Curriculum I (3)
Focuses on the development, implementation and assessment of appropriate environments and curricula for young children ages three through eight. Prepares students to utilize evidence-based, developmentally appropriate practices in the context of children's culture, language and abilities. Emphasizes understanding children's developmental stages and developing appropriate learning opportunities, interactions and environments to support each child in the following areas: literature, dramatic play, art, music, fine and gross motor play. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECE-159 Early Childhood Curriculum II (3)
Focuses on the development, implementation and assessment of appropriate environments and curricula for young children ages three through eight. Prepares students to utilize evidence-based, developmentally appropriate practices in the context of childrens culture, language and abilities. Emphasizes understanding children's developmental stages and developing appropriate learning opportunities, interactions and environments to support each child in the following areas: emergent literacy, math, science, technology and social studies. Credits: 3, Hours: (3/0/0/0), Prereq: ECE-158; Arts & Sciences Elective Code: A

ECE-170 Child Growth and Development (3)
Reviews typical and atypical development of children from conception to adolescence in all developmental domains. Examines interactions between child, family and society within a variety of community and cultural contexts and how each impacts the developing child. Examines theories and evidence-based practices associated with understanding and supporting children. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECE-221 Infant/Toddler Care and Education (3)
Focuses on care, education and assessment of children from birth to thirty-six months. Prepares students to utilize developmentally appropriate evidence-based practices including responsive caregiving, routines as curriculum, collaborative relationships with culturally, linguistically, and ability diverse children and families, and a focus on the whole child in inclusive settings. Credits: 3, Hours: (3/0/0/0), Prereq: ECE-170 or PSY-121; Arts & Sciences Elective Code: A

ECE-243 Early Childhood Guidance (3)
Focuses on developmentally appropriate evidence-based approaches and positive guidance strategies for supporting the development of each child. Emphasizes supportive interactions and developmentally appropriate environments. Uses assessment to analyze and guide behaviors. Studies impact of families, and each child's culture, language and ability on child guidance. Credits: 3, Hours: (3/0/0/0), Prereq: ECE-170 or PSY-121; Arts & Sciences Elective Code: A

ECE-262 Early Childhood Field Experience (3)
Supervised experience* in selected early childhood settings serving children ages birth through eight. Includes integration of theory, and developmentally appropriate evidence-based practice. Provides an understanding of working with culturally, linguistically and ability diverse young children and families. Emphasizes professional relationships and behavior, appropriate adult/child interactions, basic curriculum planning and program routines. Credits: 3, Hours: (1/0/6/0), Prereq: ECE-103, ECE-158, ECE-170; Arts & Sciences Elective Code: A; Comments: *Requires a minimum of 108 hours of direct work with children

ECE-290 Early Childhood Program Administration (3)
Addresses the function common to administering quality child care programs, planning, implementation, operating and evaluating. Aspects covered include director responsibilities; policy setting; development; staff, fiscal and facility management; parent involvement; and marketing. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Experience in child care setting, Early Childhood curriculum courses preferred

ECE-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires completion of an honors project learning contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ECE-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

ECN: Economics

ECN-120 Principles of Macroeconomics (3)
Introduces principles of the economizing problem with emphasis on national income and employment analysis. Includes national income accounting, the business cycle, money and banking,

fiscal and monetary theory, policy, and economic growth. Recommended for students pursuing a baccalaureate degree. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECN-130 Principles of Microeconomics (3)
Emphasizes markets, the price system and the allocation of resources, demand and supply, market structures, price and output determination, and income distribution. Recommended for students pursuing a baccalaureate degree. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECN-210 Asian Economic Systems (3)
Studies the mechanisms for decision making and the process of implementing decisions regarding the production, distribution, and consumption of goods and services in Asia. Examines different forms of economic systems including capitalism, capitalist-mixed economics, socialist-mixed economics and market socialism. Encourages students to compare and critically evaluate these various economic systems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ECN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires completion of an honors project learning contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ECN-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor , dean

EDU: Education

EDU-110 Exploring Teaching (3)
Introduces the concerns and activities of beginning teachers. The focus is on developing generic teaching skills applicable from preschool through high school. Microteaching is used to simulate actual teaching situations. Case studies are used to discuss common teaching problems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

EDU-119 Behavior Management (3)
Develops skills of observation and management of the behavior of others individually and in groups. Students develop strategies for helping others to manage their own behavior. This course meets part of the requirement for the Iowa Paraeducator Generalist Certification. May be repeated one time for credit with permission of coordinator. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

EDU-129 Inclusion and Adaptation (3)
Develops the skills to facilitate the mainstreaming of students with disabilities and work with gifted and talented students in school settings. Students taking the course learn strategies for instructing diverse groups of learners and adapting curriculum and materials. The course includes an overview of the special education system and the evolving relationship with regular education. Issues related to adults with disabilities are discussed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

EDU-141 Beginning Braille (2)
Develops the skills needed to support Braille learners. Topics include the philosophy of Braille, using Braille, making adaptations and using technology. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

EDU-200 Topics in Education (1)
Provides an opportunity for students to study a current issue in education. Topics are selected from the following categories: teaching methods, learning theory, motivation and professionalism. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

EDU-212 Educational Foundations (3)
Examines the impact of social policies on the public education system. Introduces the history and philosophy of education. Students examine current beliefs about education and its effectiveness. Controversial issues are discussed and debated. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

EDU-240 Educational Psychology (3)
Applies psychological concepts to the field of education. Major focus is on cognitive, behavioral and humanistic theories. Areas of emphasis include child and adolescent development, learning theory, memory, motivation, intelligence, instruction and measurement. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111; Arts & Sciences Elective Code: A

EDU-248 Exceptional Persons (3)
Studies the educational, cultural, and social aspects of children and adults who are exceptional in the context of mental, emotional and physical development. Includes discussion of gifted and talented children in schools. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111; Arts & Sciences Elective Code: A

EDU-249 Cultural and Linguistic Diversity (3)
Prepares staff to work with culturally and linguistically diverse children, including English language learners, those with language disorders, deaf and hard of hearing students. Includes use of technology, instructional methodology, appropriate translation and interpretation procedures, and communication with team members. Participants work collaboratively and individually to develop projects. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

EDU-278 Transition Services Field Experience and Seminar (3)
Places the student in a supported employment setting working as a job coach. Students develop specific objectives related to program competencies. Biweekly seminars are held to assess progress and student experiences. Credits: 3, Hours: (1/0/6/0), Prereq: DSV-100, EDU-279; Arts & Sciences Elective Code: A

EDU-279 Transition Services (3)
Studies issues related to career and transition programs for children receiving special education services in K-12 programs and for adults with disabilities. Addresses issues of self-determination; career assessment; transition to employment, independent living, and post-secondary education; behavior support; and interagency collaboration. Includes the role of the paraeducator in transition settings and the job coach in supported employment settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

EDU-805 Literacy Tutor Experience (1-3)
Provides students with an opportunity to spend 30, 60 or 100 hours in a school or other community agency tutoring in reading and other basic skills. In addition, 12 hours of seminar are part of the course. Credits: 1-3, Hours: (0/0/3-9/0), Arts & Sciences Elective Code: A; Comments: 2.0 GPA required

EDU-810 Field Experience (3)
Offers experience in classrooms. Students spend 100 hours per semester at a school working under the supervision of a teacher. Students choose between preschool, elementary and secondary settings. A seminar is part of the course. Credits: 3, Hours: (1/0/6/0), Prereq: EDU-110, PSY-111 and either PSY-121 or EDU-240; Arts & Sciences Elective Code: A; Comments: 2.4 GPA required

EDU-920 Field Experience (2-3)
Offers experience in classrooms. Students spend 60 or 100 hours per semester at a school working under the supervision of a teacher. Students choose between preschool, elementary and secondary settings. A seminar is also part of the course. Credits: 2-3, Hours: (0/0/6/0), Prereq: EDU-110, PSY-111 and either PSY-121 or EDU-240; Arts & Sciences Elective Code: A; Comments: 2.4 GPA required

EDU-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

EDU-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of the staff members. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean.

EGR: Engineering

EGR-100 Engineering Orientation (1)
Explores engineering career options and engineering disciplines. Students learn problem-solving skills and develop an educational plan of study. Credits: 1, Hours: (1/0/0/0), Prereq: MAT-102; Arts & Sciences Elective Code: A

EGR-160 Engineering I (3)
Develops skills in modeling and solving engineering problems, data analysis, engineering graphics, and technical communication using computer application software. Credits: 3, Hours: (2/2/0/0), Prereq: MAT-136; Arts & Sciences Elective Code: A

EGR-165 Engineering II (3)
Develops skills in solving engineering problems using the C-programming language. Programming and numerical techniques are directly applied to

the engineering discipline. Credits: 3, Hours: (2/2/0/0), Prereq: MAT-136; Arts & Sciences Elective Code: A

EGR-170 Materials Science (3)
Covers the different structures of materials and the resulting mechanical, electrical and magnetic properties; phase diagrams; kinetics and materials in engineering design. Credits: 3, Hours: (3/0/0/0), Prereq: CHM-165, MAT-136; Arts & Sciences Elective Code: A

EGR-180 Statics (3)
Covers such topics as vector algebra, forces, couples, equivalent-force couple systems, Newton's laws, friction, equilibrium, centroids, area moments of inertia and applications. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-210; Arts & Sciences Elective Code: A

EGR-280 Dynamics (3)
Emphasizes vector calculus, Newton's laws, kinetics and kinematics of particle motion, multiparticles systems, and rigid bodies and applications. Credits: 3, Hours: (3/0/0/0), Prereq: EGR-180, MAT-216; Arts & Sciences Elective Code: A

EGR-285 Introduction to Electrical Science (4)
Covers DC and AC circuits, Ohm's law, Kirchoff's voltage and current laws. Circuit analysis techniques including Thevenin equivalents, superposition, source transformation, nodal and mesh analysis, transient and steady state response, complex impedance, average power, RMS voltage and current. Credits: 4, Hours: (3/2/0/0), Prereq: MAT-216; Arts & Sciences Elective Code: A

EGR-290 Thermodynamics (3)
Includes basic elements of classical thermodynamics including first and second law; reversibility; irreversibility; Carnot cycle; properties of pure substances, closed simple systems and one-dimensional steady-flow open systems; and engineering applications. Credits: 3, Hours: (3/0/0/0), Prereq: CHM-165, MAT-216; Arts & Sciences Elective Code: A

EGR-380 Mechanics of Deformable Bodies (3)
Introduces basic theory of deformable bodies by analyzing stress/strain relationships in objects subject to axial, transverse, bending, torsion, combined and buckling loads. Elementary theory of material failure also introduced. Credits: 3, Hours: (3/0/0/0), Prereq: EGR-180, MAT-216; Arts & Sciences Elective Code: A

EGR-400 PLTW - Introduction to Engineering Design (3)
Teaches problem-solving skills using a design development process. Focuses on using solid modeling computer design software to create, analyze and communicate product solutions. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: A

EGR-410 PLTW - Principles of Engineering (3)
Using technology systems and manufacturing processes, students find out how math, science, and technology help people. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400; Arts & Sciences Elective Code: A

EGR-420 PLTW - Digital Electronics (3)
Uses computer simulations to teach students the logic of electronics as they design, test and construct circuits and devices. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: A

EGR-430 PLTW - Aerospace Engineering (3)
Teaches students to apply scientific principles and concepts to design materials and processes that directly measure, repair, and improve systems in different environments. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: A

EGR-440 PLTW - Biotechnical Engineering (3)
Introduces students to the application of biological and engineering concepts related to biomechanics, genetic engineering and forensics. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: A

EGR-450 PLTW - Computer Integrated Manufacturing (3)
Teaches robotics and automated manufacturing concepts by creating three-dimensional designs with modeling software, then producing actual models of student designs. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: A

EGR-460 PLTW - Civil Engineering and Architecture (3)
Introduces teams of students to collaboration on the development of community-based building projects and conceptual design for project presentations. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: A

EGR-470 PLTW - Engineering Design and Development (3)
Continues collaborative efforts as teams of students, guided by community members, work together to research, design and construct solutions to engineering problems. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: A

EGR-900 NSF Technology Seminar (1)
Investigates the skills and responsibilities associated with high technology careers. Students develop a Personal Growth Portfolio. May be repeated four times for credit. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

EGR-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

EGR-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

EGT: Engineering Technology

EGT-124 Strength of Materials (4)
Emphasizes design and analysis of bars, beams, shafts, connectors, columns and other structural members under various loadings. Requires students to determine stress, strain, deflection and required size. Covers thin walled pressure vessels, Poisson effect, thermal stresses, combined loads, eccentric loads and statically indeterminate loads. Demonstrates PC-based software as analysis and visualization tool. Credits: 4, Hours: (3/2/0/0), Prereq: EGT-125; Arts & Sciences Elective Code: B

EGT-125 Applied Statics (4)
Analyzes forces and moments necessary to produce static equilibrium for bodies at rest. Covers vectors, free body diagrams, the equations of equilibrium, analysis of simple structures (trusses, frames, and simple machines), friction (wedges, screws, belts, rolling wheels), fluid statics, hanging cables, centroids and area moments of inertia. Credits: 4, Hours: (3/2/0/0), Prereq: PHY-190; Arts & Sciences Elective Code: B

EGT-132 Kinematics (4)
Covers terminology, classification, analysis and design of planar mechanisms, stressing graphical techniques with CAD software. Includes position, velocity (relative and instant center methods) and acceleration for a variety of mechanisms typically containing four-bar or slider/crank linkages. Uses computer software (Working Model) for the modeling of mechanisms for visualization. Investigates the kinematics and design of cams and gears in preparation for later course work. Credits: 4, Hours: (2/4/0/0), Prereq: EGT-125; Arts & Sciences Elective Code: B

EGT-136 Dynamics (4)
Deepens student understanding of the geometry of motion (kinematics) and the forces that create it (kinetics) through solving problems involving planar motion of both particles and rigid bodies. Analyzes the kinetics of planar motion using Newton's second law, work/energy and impulse/momentum methods. Covers the basics of vibrations, simple harmonic motion and rocketry. Credits: 4, Hours: (3/2/0/0), Prereq: EGT-125; Arts & Sciences Elective Code: B

EGT-146 Hydraulics (3)
Hydraulics is a basic course in the use of hydraulic pumps and systems. Special emphasis is given to pumping, controlling, measuring flows, and design and analysis. Special emphasis is placed on distinguishing between types of valves, pumps, hose and connection arrangements, and flow patterns. Students learn basic graphical symbols for making schematic drawings as well as the terminology for all hydraulics. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

EGT-188 Design Problems (4)
Offers students the opportunity to use their creativity in designing a specific product from scratch. The process will start with a basic concept as a solution to a problem and progress through an analytical stage involving calculations and layout drawings. The project will include final assembly and detail drawings, and a bill of materials. Credits: 4, Hours: (1/6/0/0), Coreq: EGT-194; Arts & Sciences Elective Code: B

EGT-194 Machine Design (5)
Focuses on problems involving the size, shape and material requirements of machine parts. Various loading conditions are applied to the machine components. Students analyze plates, shafts, weldments, fasteners, springs, wire rope and bearings. Credits: 5, Hours: (3/4/0/0), Coreq: EGT-188; Arts & Sciences Elective Code: B

EGT-400 PLTW - Introduction to Engineering Design (3)
Teaches problem-solving skills using a design development process. Focuses on using solid modeling computer design software to create, analyze and communicate product solutions. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

EGT-410 PLTW - Principles of Engineering (3)
Using technology systems and manufacturing processes, students find out how math, science, and technology help people. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400; Arts & Sciences Elective Code: B

EGT-420 PLTW - Digital Electronics (3)
Uses computer simulations to teach students the logic of electronics as they design, test and construct circuits and devices. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: B

EGT-440 PLTW - Biotechnical Engineering (3)
Introduces students to the application of biological and engineering concepts related to biomechanics, genetic engineering and forensics. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: B

EGT-450 PLTW - Computer Integrated Manufacturing (3)
Teaches robotics and automated manufacturing concepts by creating three-dimensional designs with modeling software, then producing actual models of student designs. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: B

EGT-460 PLTW - Civil Engineering and Architecture (3)
Introduces teams of students to collaboration on the development of community-based building projects and conceptual design for project presentations. This course was developed by Project Lead the Way. Credits: 3, Hours: (1/4/0/0), Prereq: EGT-400, EGT-410; Arts & Sciences Elective Code: B

EGT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

EGT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

ELE: Electrical Technology

ELE-400 Photovoltaic Systems Installer (2)
Covers the use of various tools and techniques for solar electric component operation and connection, system design and sizing, and standard requirements and practices. Studies a range of PV system operations, from fundamentals to advanced mechanical and electrical concepts in accordance with the National Electrical Code. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

ELT: Electronics

ELT-100 Introduction to PLC Wiring and Troubleshooting (1)
Provides an introduction to system wiring as well as hardware and software troubleshooting tools and techniques. Concepts are explored and emphasized through lecture, reading and hands-on labs. Credits: 1, Hours: (.5/1/0/0), Prereq: ELT-101; Arts & Sciences Elective Code: B

ELT-101 Introduction to PLC Programming and Basic Discrete Control (1)
Provides an introduction to PLC ladder-logic programming concepts, guidelines and programming best practices, as well as processors scan and basic discrete control. Explores and emphasizes concepts through lecture, reading and hands-on labs. Credits: 1, Hours: (.5/1/0/0), Prereq: ELT-105; Arts & Sciences Elective Code: B

ELT-105 Introduction to Programmable Logic Controllers (1)
Provides an introduction to programmable logic controllers (PLC's). Concepts including system components, operational theory and functionality are explored and emphasized through lectures, reading and hands-on labs. Credits: 1, Hours: (.5/1/0/0), Prereq: ELT-211; Arts & Sciences Elective Code: B

ELT-127 Introduction to Intermediate PLC Instruction and Function (1)
Provides an introduction to timing and counting functions as well as compare functions and data manipulation. Concepts are explored and emphasized through lecture, reading and hands-on labs. Credits: 1, Hours: (.5/1/0/0), Prereq: ELT-100; Arts & Sciences Elective Code: B

ELT-128 Introduction to Solid State Motor Control Techniques (1)
Provides an introduction to solid-state motor control techniques. Concepts including system components, operational theory and functionality are explored and emphasized through lecture, reading and hands-on labs. Credits: 1, Hours: (.5/1/0/0), Prereq: ELT-127; Arts & Sciences Elective Code: B

ELT-137 Introduction to Solid State Motor Control Wiring and Troubleshooting (1)
Provides an introduction to system wiring as well as hardware and software troubleshooting tools and techniques. Concepts including system components, operational theory and functionality are explored and emphasized through lecture, reading and hands-on labs. Credits: 1, Hours: (.5/1/0/0), Prereq: ELT-128; Arts & Sciences Elective Code: B

ELT-146 National Electrical Code and Electrical Wiring (5)
Covers electrical codes and wiring techniques that are essential to the installation of electrical wiring. Local and National Electrical Codes are used to complete electrical wiring diagrams for a residential structure. Practical experience is provided by laboratory exercises designed to familiarize the student with electrical wiring components, wiring techniques, and the tools of the trade. Credits: 5, Hours: (3/4/0/0), Prereq: ELT-304; Arts & Sciences Elective Code: B

ELT-152 Industrial Maintenance I (4)
Provides an elementary look into industrial maintenance. Topics include electrical safety, vibration analysis, shaft alignment, lubrication, thermal imaging and preventive maintenance. Credits: 4, Hours: (3/2/0/0), Arts & Sciences Elective Code: B

ELT-162 Industrial Maintenance II (4)
Covers advanced mechanical drive systems, thermal imaging, vibration analysis and preventative maintenance. Emphasizes concepts and theory through laboratory exercises and lecture. Credits: 4, Hours: (2/4/0/0), Prereq: ELT-152; Arts & Sciences Elective Code: B

ELT-179 Electronic Board Soldering (1)
Teaches the identification, selection and safe use of appropriate soldering tools and equipment. Covers the technology and techniques of proficient soldering and inspection of through-hole components, dual-inline package integrated circuits and surface mount components to printed circuit boards (PCBs). Demonstrates proper desoldering of through-hole and SMT components. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

ELT-211 Motor Control Circuits (4)
Provides students with theory and hands on experience analyzing, designing and troubleshooting motor control circuits. Learning activities include reading, lecture and labs. Motor control theory is introduced covering control devices, schematic symbols, and the use of schematic and wiring diagrams. Wiring labs provide practical applications for control circuits. Students prepare simple schematics and wiring diagrams to meet specifications. Credits: 4, Hours: (1/6/0/0), Prereq: ELT-224; Arts & Sciences Elective Code: B

ELT-224 Motors and Transformers (5)
Provides theory and hands-on experience with electric motors and transformers. Learning activities include reading, lecture and labs. Covers DC, three-phase and single-phase motors in depth, and studies three-phase and single-phase trans-

formers, applications and connections. Credits: 5, Hours: (4/2/0/0), Prereq: ELT-304, MAT-718; Arts & Sciences Elective Code: B

ELT-255 Programmable Logic Controllers (6)
Covers basic and advanced programming of the most popular programmable controllers used in industrial automation. Basic ladder logic programming, timers, counters, data manipulation, data compare, temperature control and analog operations are covered. Troubleshooting and installation are also included. Credits: 6, Hours: (3/6/0/0), Prereq: ELT-211; Arts & Sciences Elective Code: B

ELT-277 Electronic Practices (3)
Presents DC current, voltage, energy, power, resistance, capacitance, inductance and semiconductor theory in a practical laboratory setting. Focuses on lab safety, component identification, schematic reading and the use of equipment to measure prototype circuits. Includes extensive laboratory sessions requiring schematic reading, constructing circuits, using soldering and solder-less breadboard, and utilizing lab equipment to measure and troubleshoot circuits. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-299 Introduction to LabView (3)
Introduces LabView, including modular programming, loops, charts, arrays, clusters, case and sequence structures, strings and file I/O. Presents Windows operating system basics, word processing and Excel software. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-301 Professional Development (1)
Presents the abilities and behaviors expected by employers of electronics technicians. Discusses personal development and career advancement. Establishes guidelines for personal organization, problem solving, verbal and non-verbal skills, participation, punctuality and dependability. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

ELT-304 Introduction to Electrical Circuits (4)
Studies the theory and application of electricity. Includes electrical safety, shop methods, electrical theory and circuit analysis. Laboratory experiments enhance learning of theories studied and provide hands-on experience with electrical test instruments and soldering equipment. Credits: 4, Hours: (3/2/0/0), Prereq: MAT-109; Arts & Sciences Elective Code: B

ELT-309 Digital Circuits (3)
Presents the analysis and design of digital circuits. Introduces Boolean algebra as a tool for working with basic gates, flip-flops, latches, and adders and timers. Laboratory and computer-simulation exercises enhance understanding. Credits: 3, Hours: (2/2/0/0), Prereq: ELT-517; Arts & Sciences Elective Code: B

ELT-341 Electric Circuits II (5)
Adapts DC circuit analysis techniques to the AC realm. Examines the fundamental concepts of passive filters and frequency response. Includes computer simulations and extensive laboratory sessions. Credits: 5, Hours: (4/2/0/0), Prereq: ELT-345; Arts & Sciences Elective Code: B

ELT-345 Electric Circuits I (5)
Presents fundamental DC concepts (i.e., current, voltage, polarity, energy, power), describes methods for analyzing DC electric circuits, studies resistive-inductive and resistive-capacitive circuits, and introduces the fundamental concepts of AC electricity. Includes computer simulations and extensive laboratory sessions. Credits: 5, Hours: (4/2/0/0), Prereq: College-level math course and Electronic Practices; Arts & Sciences Elective Code: B

ELT-395 Advanced Electrical Circuits (5)
Continues Introduction to Electrical Circuits and expands to include AC theory, inductors, capacitors, transformers, three-phase, networks and magnetism. Lab exercises reinforce concepts learned by providing experience and troubleshooting opportunities. Credits: 5, Hours: (4/2/0/0), Prereq: ELT-304, either MAT-137 or MAT-102; Arts & Sciences Elective Code: B

ELT-400 Local Loop (3)
Introduces students to the construction and maintenance of the local loop. Learning activities include termination and equipment for both residential and commercial applications. Other topics covered include voice data, analog and digital circuits. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-402 Introduction to Communication Systems (3)
Provides an introduction to the telecommunications industry, including regulating bodies and standards. Technical concepts covered include color code, wire types, terminals and enclosures, connectors and splicing. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-408 Structured Cabling System (3)
Introduces the components used in connecting electrical communication devices and systems. Students work with twisted pairs to construct cables used in communication networks. Laboratory experiments are designed to give the student practical experience with cabling and termination. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-427 Telephony Circuits I (3)
Covers the theory of telephony circuits. Emphasis is placed on how a telephone functions; analog-to-digital conversion; multiplexing; and transmission of voice, data and video signals. Lab activities reinforce lecture topics. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-428 Telephony Circuits II (3)
A continuation of ELT-427. This course expands the analysis of voice, video and data communication circuits. Credits: 3, Hours: (2/2/0/0), Prereq: ELT-427; Arts & Sciences Elective Code: B

ELT-438 Data Acquisition & Analysis (2)
Provides students with the knowledge required to specify, evaluate and use a wide variety of digital data acquisition systems in laboratory and field applications. Reinforces basic principles of sampling and digitizing theory with practical examples from everyday testing operations. Emphasizes the interaction between test design, data acquisition and analysis. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

ELT-443 Multiplexing I (3)
Introduces the concepts of switching networks and multiple-user communication lines. Topics include common channel signaling, public packet switched networks, integrated digital networks and synchronized optic networks. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-455 Transmission Circuits I (3)
Explores in detail the methods of transmitting and receiving voice, data and video signals. The course includes fiber optic, microwave, satellite and data networking forms of transmission. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-460 Fiber Optics (3)
Covers the theory and application of fiber optic principles and devices. Topics include performance comparisons of specific systems, noise analysis and receive sensitivity. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

ELT-500 LAN Design & Protocols (3)
Provides the student with a basic understanding of networking. Topics include OSI model and industry standards, networking topologies, IP addressing with a subnet mask, networking components and basic network design. Credits: 3, Hours: (2/2/0/0), Prereq: NET-154; Arts & Sciences Elective Code: B

ELT-506 Router Basics (3)
Introduces students to routers, setup, configuration and management of using routers in a network environment. Credits: 3, Hours: (2/2/0/0), Prereq: ELT-500; Arts & Sciences Elective Code: B

ELT-517 Active Devices I: Transistor Amplifiers (6)
Presents an analytical approach with laboratory and computer-simulation exercises to the design and troubleshooting of transistor amplifiers. Topics include BJTs, FETs, small signal/power amplifiers and frequency response. Credits: 6, Hours: (4/4/0/0), Prereq: ELT-277; Coreq: ELT-341, MAT-746; Arts & Sciences Elective Code: B

ELT-518 Active Devices II: Operational Amplifiers (3)
Presents an analytical approach with laboratory and computer-simulation exercises to the design and troubleshooting of operational amplifier circuits. The four basic types of negative feedback are extensively examined. Topics include voltage amplifiers, comparators, analog-to-digital conversion, waveshaping and active filters. Credits: 3, Hours: (2/2/0/0), Prereq: ELT-517; Arts & Sciences Elective Code: B

ELT-520 Communication Electronics I (4)
Provides students a background necessary for working with systems and circuits used in today's communications industry. Major topics are: signal representations, block diagrams, amplitude modulation, single sideband, frequency and phase modulation, time division multiplexing and frequency division multiplexing. Credits: 4, Hours: (3/2/0/0), Prereq: ELT-518; Arts & Sciences Elective Code: B

ELT-521 Communication Electronics II (4)
Continues Communication Electronics I. Major topics are: antennas, transmission lines, propa-

gation of electromagnetic waves, waveguides, FM stereo multiplex, color television and other communication electronics. Credits: 4, Hours: (3/2/0/0), Prereq: ELT-520; Arts & Sciences Elective Code: B

ELT-616 Microprocessors I (4)
Studies counters, shift registers, memory, storage, digital signal processing and microprocessors. Credits: 4, Hours: (3/2/0/0), Prereq: ELT-309; Arts & Sciences Elective Code: B

ELT-621 Microprocessors II (4)
Introduces software engineering through a combination of C programming language, robotics and version control software. Extensive laboratory sessions using C and robotics will enhance understanding. Credits: 4, Hours: (3/2/0/0), Prereq: ELT-616; Arts & Sciences Elective Code: B

ELT-726 Industrial Drives and Devices Systems and Controls (3)
Covers advanced PLC programming, sensing devices and industrial motor drives. Enforces industrial automation concepts through lab exercises with the Mechatronics trainer, which applies PLCs, motion control, robotics and fluid power technologies. Credits: 3, Hours: (2/2/0/0), Prereq: ELT-211; Arts & Sciences Elective Code: B

ELT-795 Fundamentals of Fluid Power (5)
Familiarizes students with basic hydraulic systems. Includes common components and applications, theory of operation and basic troubleshooting techniques. Course theory is supplemented with laboratory experiments. Credits: 5, Hours: (4/2/0/0), Prereq: ELT-304, MAT-109; Arts & Sciences Elective Code: B

ELT-798 Fundamentals of Hydraulic and Pneumatic Systems (5)
Focuses on proper usage and application of, as well as the theory and physics behind, hydraulic and pneumatic systems and controls. Introduces the various components used in each type of system, electro-hydraulic components, electro-pneumatic components and component selection. Students design, assemble and troubleshoot various types of hydraulic and pneumatic control systems and components. Credits: 5, Hours: (2/6/0/0), Prereq: ELT-211, MAT-109; Arts & Sciences Elective Code: B

ELT-845 Design Projects (4)
Provides students experience in individually designing subsystems and in working as part of a design group where each student has specific responsibilities toward achieving the overall goal of designing, building, troubleshooting and testing a complex electronic system. Credits: 4, Hours: (3/2/0/0), Coreq: ELT-521; Arts & Sciences Elective Code: B

ELT-852 Air Conditioning and Refrigeration I (5)
Familiarizes students with basic refrigeration terms, basic components, refrigerants and specialized equipment used to service refrigeration or air conditioning systems. Practical skills are obtained in laboratory exercises. Credits: 5, Hours: (4/2/0/0), Prereq: ELT-211, PHY-180; Arts & Sciences Elective Code: B

ELT-853 Air Conditioning and Refrigeration II (10)
Covers domestic and light commercial refrigeration, air conditioning, heating systems and heat pumps in theory and labs. Provides students with extensive experience in system troubleshooting. Credits: 10, Hours: (8/4/0/0), Prereq: ELT-852; Arts & Sciences Elective Code: B

ELT-856 Communication Projects (3)
Covers projects related to building an oscillator, an AM generator, a balanced modulator and an FM generator. Other related projects may be assigned as time permits. Credits: 3, Hours: (1/4/0/0), Prereq: ELT-518; Coreq: ELT-520; Arts & Sciences Elective Code: B

ELT-860 Heating, Vent, and Air Conditioning Systems and Controls (6)
Provides the student with working knowledge of commercial air handling units and heating/ cooling systems. Pneumatic environmental controls application, calibration and troubleshooting are also covered in theory and laboratory exercises. Credits: 6, Hours: (4/4/0/0), Prereq: ELT-853; Arts & Sciences Elective Code: B

ELT-880 Telecommunications Internship (3)
Provides an on-site job experience for the student. Students are exposed to telecommunications equipment and systems in a typical work environment. Credits: 3, Hours: (0/0/0/12), Arts & Sciences Elective Code: B

ELT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ELT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

EMS: Emergency Medical Services

EMS-200 Emergency Medical Technician (8)
Prepares students to work for fire and ambulance services. Focuses on treatment of illness and injury, basic airway management, and automated defibrillation. Course can be taken for personal knowledge or to enhance marketability in other healthcare professions. This 152-hour course is the entry-level career certification course in Emergency Medical Services. Credits: 8, Hours: (7/1/1.5/0), Arts & Sciences Elective Code: B; Comments: Current certification in CPR for health care providers is required

EMS-233 Emergency Medical Technician Basic Theory (6.5)
Develops knowledge and skills in providing basic life support management of medical and traumatic emergencies. Focuses on patient assessment and history taking and management of cardiopulmonary, medical, behavioral and environmental emergencies, and childbirth and pediatrics. Credits: 6.5, Hours: (6/1/0/0), Arts & Sciences Elective Code: B; Comments: Current certification in CPR for health care providers is required

EMS-235 Emergency Medical Technician Basic Practical Applications (0.5)
Provides opportunities for students to practice patient care under supervision in pre-hospital and emergency department settings. Credits: 0.5, Hours: (0/0/1.5/0), Coreq: EMS-233; Arts & Sciences Elective Code: B

EMS-300 Advanced Emergency Medical Technician (8)
Prepares students for the National Registry practical and written examinations for State of Iowa certification. Focuses on prehospital emergency care fundamentals, and advanced airway and cardiac management skills. Requires 72 hours of clinical internship at hospitals, ambulance services or fire departments. Credits: 8, Hours: (6/1/4.5/0), Prereq: EMS-200; Arts & Sciences Elective Code: B; Comments: Current certification in CPR for health care providers and active EMT certification are required

EMS-640 EMS Operations (1)
Provides discussion and demonstration of proper documentation in EMS, emergency vehicle operations and non-patient care aspects of EMS. Credits: 1, Hours: (1/0/0/0), Coreq: EMS-641; Arts & Sciences Elective Code: B

EMS-641 Introduction to Paramedicine (3)
Provides an overview of paramedic roles and responsibilities and the emergency medical service system. Includes discussion of medicolegal and ethical issues in EMS, agents of trauma and disease, and career opportunities for paramedics. Provides discussion and demonstration of proper documentation in EMS, emergency vehicle operations, and non-patient care aspects of EMS. Credits: 3, Hours: (3/0/0/0), Prereq: EMS-200; Arts & Sciences Elective Code: B; Comments: Need to hold a current EMT-B Iowa Certification

EMS-642 Pharmacology for Paramedicine (3)
Provides an introduction to drug classifications, mechanism of action and metabolism. Discusses indications, contraindications, dosages, routes of administration and side effects of drugs administered by the paramedic. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-161, MAT-731; Arts & Sciences Elective Code: B

EMS-643 Cardiorespiratory Paramedicine (3)
Provides lecture, discussion and case-based teaching in the pathophysiology, recognition, and advanced life support of cardiovascular and respiratory emergencies and shock. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-181, EMS-641, EMS-642; Arts & Sciences Elective Code: B

EMS-644 Paramedic Clinical I (3)
Provides opportunities for observation and supervised participation in the delivery of advanced life support in pre-hospital and emergency department settings. Credits: 3, Hours: (0/0/9/0), Prereq: BIO-181, EMS-641, EMS-642; Coreq: EMS-645; Arts & Sciences Elective Code: B

EMS-645 Paramedic I (2.5)
Provides scenario-based teaching and student practice in techniques of assessment and management of patients with cardiovascular and respiratory emergencies. This course includes ACLS certification. Credits: 2.5, Hours: (0.5/4/0/0), Prereq: EMS-641, EMS-642; Coreq: EMS-643, EMS-644; Arts & Sciences Elective Code: B

EMS-646 Paramedic Clinical II (4)
Provides opportunities for observation and supervised practice of patient assessment and management in various settings. Credits: 4, Hours: (0/0/12/0), Prereq: EMS-644; Coreq: EMS-647, EMS-648, EMS-649; Arts & Sciences Elective Code: B

EMS-647 Paramedic II (3.5)
Provides demonstration and scenario-based practice of assessment and management of trauma, medical, psychological, pediatric, geriatric and obstetric patients. Includes PALS and PHTLS certification. Credits: 3.5, Hours: (1/5/0/0), Prereq: EMS-645; Coreq: EMS-646, EMS-648, EMS-649; Arts & Sciences Elective Code: B

EMS-648 Special Patient Populations in Emergency Medical Services (4)
Provides lecture-discussion and case-based teaching of EMS, assessment and management of emergencies specific to pediatric, geriatric, disabled and obstetric patient populations. Includes GEMS certification. Credits: 4, Hours: (4/0/0/0), Prereq: EMS-643; Coreq: EMS-646, EMS-647, EMS-649; Arts & Sciences Elective Code: B

EMS-649 Trauma and Environmental Emergencies (4)
Provides lecture-discussion and case-based teaching in the kinematics of trauma, pathophysiology of shock and trauma, and techniques of trauma management. Discussion of identification and management of environmental emergencies including heat and cold, barotrauma, altitude, radiation, hazardous materials and drowning emergencies. Includes PEPP certification. Credits: 4, Hours: (4/0/0/0), Prereq: EMS-643; Coreq: EMS-646, EMS-647, EMS-648; Arts & Sciences Elective Code: B

EMS-650 Medical and Psychological Emergencies (4)
Lecture and case-based teaching in the pathophysiology, recognition and advanced life support assessment and management of emergencies involving the nervous, endocrine, renal, and gastrointestinal systems. Assessment and intervention in psychological emergencies. Includes AMLS certification. Credits: 4, Hours: (4/0/0/0), Prereq: EMS-643, EMS-648; Coreq: EMS-651, EMS-652; Arts & Sciences Elective Code: B

EMS-651 Paramedic Fieldwork (4)
Provides opportunities for guided paramedic practice and evaluation in the pre-hospital setting. Students are expected to achieve increasing independence as paramedic level practitioners. The student must complete a prescribed number of patient contacts as team leader. Credits: 4, Hours: (0/0/12/0), Prereq: EMS-646; Coreq: EMS-652; Arts & Sciences Elective Code: B

EMS-652 Paramedic Clinical III (4)
Provides an opportunity for guided paramedic practice and evaluation in hospital clinical environments. Credits: 4, Hours: (0/0/12/0), Prereq: EMS-646; Coreq: EMS-650, EMS-651; Arts & Sciences Elective Code: B

EMS-653 Paramedic III (1)
Provides an opportunity for scenario-based skill and assessment practice in biweekly lab sessions that prepare the student for the NREMT paramedic practical examination for certification. Credits: 1, Hours: (0/2/0/0), Prereq: EMS-647; Coreq: EMS-650, EMS-651, EMS-652; Arts & Sciences Elective Code: B

EMS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

END: Electroneurodiagnostic

END-100 Introduction to Electroneurodiagnostics (2.5)
Provides an introduction to basic electroencephalographic concepts and techniques. Instrumentation is demonstrated in the classroom and hands-on experience is provided in the laboratory. Credits: 2.5, Hours: (1/3/0/0), Coreq: BIO-161, HSC-107, HSC-117, HSC-210, HSC-211; Arts & Sciences Elective Code: B

END-200 Applied Electronics and Instrumentation (1.5)
Includes electronics and instrumentation associated with the conventional electroencephalograph: the power supply, contribution of electrodes, differential amplifier concepts, filters (low frequency, high frequency and 60-hertz filter), the writer unit, electrical output, electrical safety and standards for clinical electroencephalographs. Also covers ambulatory monitoring and digital electroencephalography. Credits: 1.5, Hours: (1/1/0/0), Coreq: BIO-181, END-310, END-330; Arts & Sciences Elective Code: B

END-310 Electroneurodiagnostic Technical Science (7)
Provides theory and application of electrical concepts, recording techniques, data analysis and description. Credits: 7, Hours: (2/6/6/0), Prereq: BIO-168, END-100; Coreq: BIO-181, END-200, END-330; Arts & Sciences Elective Code: B

END-330 Electroneurodiagnostic Clinical Science (2)
Introduces students to electroneurodiagnosis, neurophysiology, functional neuroanatomy, normal and abnormal conditions, and correlates. Includes electroencephalographic signs of cerebral disorders. Studies specific neurological disease entities; integrates EEG patterns for cerebral disorders and diagnosis. Credits: 2, Hours: (2/0/0/0), Prereq: BIO-168, END-100; Coreq: BIO-181, END-200, END-310; Arts & Sciences Elective Code: B

END-400 Evoked Potentials I (1)
Provides evoked potential instrumentation: EP history, signal averaging, statistics, A/D converter, signal averages, amplifiers, filters and stimulators. Includes recording evoked potentials from volunteers and observing the effect of different variables. Credits: 1, Hours: (1/0/0/0), Prereq: END-200, END-310, END-330; Coreq: END-810; Arts & Sciences Elective Code: B

END-420 Evoked Potentials II (2)
Provides introduction in somatosensory, visual and brainstem auditory evoked responses. Laboratory sessions provide practical application and evaluation of EP data. Credits: 2, Hours: (1/2/0/0), Prereq: END-400, END-810; Coreq: END-830; Arts & Sciences Elective Code: B

END-810 Electroneurodiagnostic Clinic I (6)
Focuses on clinical application of basic EEG techniques according to lab protocol under direct supervision of staff. Record review with physicians and correlative seminars are included. Credits: 6, Hours: (1/0/15/0), Prereq: END-200, END-310, END-330; Coreq: END-400; Arts & Sciences Elective Code: B

END-830 Electroneurodiagnostic Clinic II (7.5)
Provides continued clinical recording techniques including a broad patient population and procedure range. Record review with physicians and correlative seminars are included. Credits: 7.5, Hours: (1/0/19.5/0), Prereq: END-400, END-810; Coreq: END-420; Arts & Sciences Elective Code: B

END-850 Electroneurodiagnostic Clinic III (5.5)
Provides clinical practice in performing electroencephalograms, evoked potentials, intraoperative monitoring and epilepsy. Record and review with physicians and correlative seminars are included. Credits: 5.5, Hours: (1/1/12/0), Prereq: END-420, END-830; Coreq: END-870; Arts & Sciences Elective Code: B

END-870 Sleep Technology (6.5)
Provides clinical practice in polysomnography using appropriate techniques according to protocol. Record and review with physicians and correlative seminars are included. Credits: 6.5, Hours: (1/1/15/0), Prereq: END-420, END-830; Coreq: END-850; Arts & Sciences Elective Code: B

END-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

END-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

ENG: English Composition

ENG-013 Basic Writing (3)
Provides group instruction in basic writing skills: writing to communicate with the reader, sentence and paragraph structure, proofreading for spelling, grammar and punctuation errors. Students in this course should not have previous or concurrent enrollment in Elements of Writing, Composition I and II, College Writing or Workplace Communication. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

ENG-027 Basic Essay Writing (1)
Introduces students to the concept of writing papers using the five paragraph organization

approach. Students in this course should not have previous or concurrent enrollment in Elements of Writing, Composition I and II, College Writing, or Workplace Communication. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: D

ENG-049 College Readiness Experience Writing/ Reading (4)
Provides basic writing/reading instruction to determine student readiness for college-level writing and reading courses. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: D

ENG-059 College Prep Writing (3)
Provides students with basic skills instruction in a traditional group setting. The curriculum includes two hours of reading and one hour of writing per week. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

ENG-070 Personal Achievement Writing (1-2)
Designed to assess a student's writing strengths and weaknesses. The student receives instruction on an individualized basis in the areas of skill needs while building on skills already mastered. The course is divided into two parts: knowledge about language and experience using the language. The course helps prepare the student to take Elements of Writing and may also be supplemental support for students enrolled in Composition I, Composition II, Workplace Communication or other writing courses. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: D

ENG-075 Personal Achievement Reading (1-2)
Designed to measure the student's present reading skills and from that measurement provide an individualized program for the improvement of skills. The course is divided into three main areas: pronunciation, vocabulary and comprehension. The reading materials utilized are related to the student's interests. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: D

ENG-101 Elements of Writing (3)
Develops students' fluency in communication and clarity in thinking through writers' notebooks, expository writing, analytical reading and listening. Students use structured assignments to explore personal goals and values, exercising skills needed for reasoning and writing across the curriculum. Credits: 3, Hours: (3/0/0/0), Prereq: Qualifying placement score; Arts & Sciences Elective Code: A

ENG-105 Composition I (3)
Develops expository writing with emphasis on organization, supporting details, style, vocabulary and library research skills. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-101 or qualifying placement score; Arts & Sciences Elective Code: A

ENG-106 Composition II (3)
Teaches precise and responsible use of research tools. Requires critical analysis of reading materials, audience and self when communicating content material. Develops students' ability to use effective and ethical arguments. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105; Arts & Sciences Elective Code: A

ENG-108 Composition II: Technical Writing (3)
Provides concepts, principles and practice of writing and analyzing documents in business, science (including health occupations) and industry. Research emphasized. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

ENG-120 College Writing (5)
Develops expository writing with emphasis on substance, organization, supporting details, style and vocabulary. Teaches precise and responsible use of research tools. Requires critical analysis of reading materials in curriculum content areas, current issues and literature. Develops students' ability to use ethical and logical argument. Credits: 5, Hours: (5/0/0/0), Prereq: ENG-101 or qualifying placement score; Arts & Sciences Elective Code: A

ENG-150 Fundamentals of English Grammar (3)
Reviews English grammatical structure and examines advanced grammatical patterns for both native and non-native speakers of English. Provides practice in using English grammar fluently in writing, reading and speaking. Emphasizes grammar in application and linguistic analysis of grammar. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ENG-221 Creative Writing (3)
Offers students an opportunity to do advanced work in writing short story, poetry, literary nonfiction or play writing. Emphasizes regular workshops with attention to content issues, structures, forms and styles of particular genres. Students read and comment on other students' works as well as published material. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

ENG-225 Creative Writing: Poetry (3)
Offers a writing workshop devoted to students' poetry. Class time devoted to responding to and revising work, reading and discussing published poetry, and exploring various forms of the poem. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

ENG-233 Creative Writing: Short Fiction (3)
Offers a writing workshop focused on students' attempts and successes in writing 500- to 3,500-word short stories. Seventy-five percent of class time devoted to drafting, reading and responding to peers' drafts; 25 percent devoted to reading and discussing published short stories and the elements of fiction as they apply to crafting stories. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105, ENG-120; Arts & Sciences Elective Code: A

ENG-235 Creative Writing: Playwriting/ Screenwriting (3)
Offers a writing workshop for students' playwriting or screenwriting. Class time devoted to reading and responding to students' work, and discussing published and produced plays and screenplays. Homework devoted to drafting and revising and to reading and responding to published and produced plays and screenplays. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

ENG-238 Creative Writing: Nonfiction (3)
Offers a writing workshop for students' nonfiction: personal essays, memoir, nature writing, literary journalism, or other subgenre of the craft. Class time devoted to reading and responding to classmates' work, discussing published nonfiction and the writing craft. Homework devoted to drafting and revising, and to reading and responding to published nonfiction in a variety of subgenres. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

ENG-240 Advanced Creative Writing (3)
Offers students an opportunity to do advanced work in fiction, poetry and literary nonfiction, with an eye toward getting something published. Students respond to each other's writing and enlarge their knowledge of the publishing industry. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-221 or ENG-225 or ENG-233 or ENG-235 or ENG-238; Arts & Sciences Elective Code: A

ENG-245 Advanced Creative Writing: Short Fiction (3)
Provides a writing workshop approach to working on students' short fiction. Seventy-five percent of class time is devoted to reading and responding to other students' work and discussing the responses; 25 percent of class time is devoted to discussing already published work. All critiquing based in either New Critical/Elements of Fiction discourse or Reader Response. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-221 or ENG-233; Arts & Sciences Elective Code: A

ENG-275 Editing a Literary Magazine (3)
Provides practical experience in reading and editing literary manuscripts (nonfiction, fiction and poetry). Students design and edit hypothetical magazines using actual student manuscripts and work on preparing an issue of Cedar Valley Divide, Kirkwood's student art and literary magazine. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

ENG-290 Literary Magazine Layout and Production (3)
Provides practical experience working on an editorial team to produce a student art and literary magazine, Kirkwood's Cedar Valley Divide (CVD). Focuses on designing and editing the magazine using Adobe InDesign and Photoshop software; coordinating with submitters, independent publishers and printers; and establishing and meeting deadlines to successfully publish the CVD by semester's end. Credits: 3, Hours: (2/2/0/0), Prereq: ENG-275; Arts & Sciences Elective Code: A

ENG-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires that student meets honors eligibility criteria. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ENG-928 Independent Study (1-3)
Provides opportunity for independent writing projects under the guidance of a faculty member. Credits: 1-3, Hours: (1-3/0/0/0), Prereq: ENG-105, ENG-221; Arts & Sciences Elective Code: A; Comments: Permission of instructor.

ENV: Environmental Science

ENV-115 Environmental Science (3)
Examines environmental issues from a scientific perspective. Topics examined include ecosystems, energy, global warming, ozone depletion, air pollution, water resources, population growth and biodiversity. Students are required to analyze environmental problems and draw conclusions. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ENV-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ENV-928 Independent Study (0.5)
Provides students an opportunity to further their studies in environmental science. After consultation with instructor, readings, papers and basic research or other projects may be assigned. Credits: 0.5, Hours: (0.5/0/0/0), Arts & Sciences Elective Code: A; Comments: College-level biology or environmental science course or permission of instructor

ESI: Intensive English Second Language

ESI-006 L1 ELA Reading & Vocabulary (3)
Begins the study of English reading and vocabulary development for non-native speakers who have little to no English. Emphasizes reading skills in informal settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

ESI-007 L1 Ela Listening and Conversation (3)
Begins the study of conversation and listening skills in English for non-native speakers who have little to no English. Emphasizes communicative speaking and negotiative listening in informal language settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

ESI-010 L1 ELA Phonetics and Pronunciation (3)
Begins the study of English segmentals and intonation for non-native speakers who have little to no English. Emphasizes the use of phonetic alphabet. Focuses on using segmentals and intonation, in informal language settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

ESI-011 L1 ELA Grammar (4)
Begins the study of the basics of English grammar for non-native speakers of English. Focuses on using English grammar fluently in writing, reading and speaking. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: D

ESI-014 L1 ELA Writing (2)
Provides practice in the basic formation of the English alphabet. Focuses on writing at the sentential level for non-native speakers who have little to no English. Increases the use of vocabulary in writing. Familiarizes the student with keyboarding. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: D

ESI-016 L2 ELA Writing (2)
Provides practice in the basic formation of English sentences, paragraphs and reports for non-native speakers of English. Provides practice in structure, and in using English vocabulary in writing. Credits: 2, Hours: (2/0/0/0), Prereq: ESI-014; Arts & Sciences Elective Code: D

ESI-018 L2 ELA Grammar (4)
Provides practice in the basics of English grammar for non-native speakers of English. Focuses on using English grammar fluently in writing, reading and speaking. Credits: 4, Hours: (4/0/0/0), Prereq: ESI-011; Arts & Sciences Elective Code: D

ESI-019 L2 ELA Listening Skills and Culture (3)
Provides beginning-level practice in conversation and listening skills in English for non-native speakers of English. Emphasizes speaking and listening in formal and informal language settings. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-007; Arts & Sciences Elective Code: D

ESI-021 L2 ELA Phonetics and Pronunciation (3)
Provides practice in English segmentals and intonation of the English language for non-native speakers at the beginning level. Focuses on using segmentals and intonation, in formal and informal language settings. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-010; Arts & Sciences Elective Code: D

ESI-023 L2 ELA Reading and Vocabulary (3)
Provides practice in reading and vocabulary development at the beginning level for non-native speakers of English. Emphasizes reading skills in academic settings. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-006; Arts & Sciences Elective Code: D

ESI-037 L3 ELA Writing (2)
Continues practice in the formation of English sentences, paragraphs and reports for non-native speakers of English at a beginning intermediate level. Builds students' writing structure skills, and use of English vocabulary in writing. Credits: 2, Hours: (2/0/0/0), Prereq: ESI-016; Arts & Sciences Elective Code: D

ESI-038 L3 ELA Grammar (4)
Continues practice in English grammar for non-native speakers of English at the beginning intermediate level. Focuses on using English grammar fluently in writing, reading and speaking. Credits: 4, Hours: (4/0/0/0), Prereq: ESI-018; Arts & Sciences Elective Code: D

ESI-039 L3 ELA Listening Skills, Conversation and Culture (3)
Continues practice in conversation and listening skills in English for non-native speakers of English at the beginning intermediate level. Emphasizes speaking and listening in formal and informal language settings. Exposes students to English culture and cultural expectations. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-019; Arts & Sciences Elective Code: D

ESI-040 L3 ELA Phonetics and Pronunciation (3)
Continues practice in English segmental and intonation of the English language for non-native speakers at the beginning intermediate level. Provides practice in using segmentals and intonation, in formal and informal language settings. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-021; Arts & Sciences Elective Code: D

ESI-042 L3 ELA Reading and Vocabulary (3)
Continues practice in reading and vocabulary development at the beginning intermediate level for non-native speakers of English. Emphasizes reading skills in academic settings. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-023; Arts & Sciences Elective Code: D

ESI-062 L4 ELA Culture and Conversation (3)
Continues practice in conversation in English for non-native speakers of English at the advanced intermediate level. Focuses on speaking, in formal and informal language settings. Exposes students to English culture and cultural expectations in conversation and oral interaction. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-039; Arts & Sciences Elective Code: D

ESI-063 L4 ELA Writing (3)
Continues practice in the formation of English sentences, paragraphs, and reports for non-native speakers of English at an advanced intermediate level. Provides practice in writing structure, and using English vocabulary in writing. Emphasizes academic report structure and conventions. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-037; Arts & Sciences Elective Code: D

ESI-064 L4 ELA Grammar and Usage (3)
Continues practice in English grammar for non-native speakers of English at the advanced intermediate level. Provides practice in using English grammar fluently in writing, reading and speaking. Emphasizes grammar in applications. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-038; Arts & Sciences Elective Code: D

ESI-068 L4 ELA Reading and Vocabulary (3)
Practice in reading and vocabulary development at the advanced intermediate level. Emphasizes more subtle vocabulary and comprehension for academic settings. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-042; Arts & Sciences Elective Code: D

ESI-069 L4 ELA Presentations (3)
Prepares non-native speakers of English for academic communication skills, including presentations. Provides opportunity to practice academic skills, emphasizing presentation and other skills, at the advanced intermediate level. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-040; Arts & Sciences Elective Code: D

ESI-090 L5 ELA Culture and Conversation (3)
Continues practice in conversation in English for non-native speakers of English at the beginning advanced level. Provides practice in speaking in formal and informal language settings. Exposes students to English culture and cultural expectations in conversation and oral interaction. Credits: 3, Hours: (3/0/0/0), Prereq: ESI-062; Arts & Sciences Elective Code: D

ESI-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ESI-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-3, Hours: (0/2-6/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

ESI-949 English Language Acquisition Special Topics (1-12)
Develops English language skills in a classroom setting, in reading, writing, communication, grammar and/or for special purposes. Credits: 1-12, Hours: (1-12/0/0/0), Arts & Sciences Elective Code: D

EXS: Exercise Science

EXS-280 Exercise Physiology (4)
Defines exercise through the study of neuromuscular physiology, metabolism, exercise endocrinology, cardiometabolic response, environmental adaptation and optimized physical performance. Examines physiological response to various modes of exercise through laboratory activities and culminates with an original research project. Intended for students pursuing health-related careers, health pre-professional programs or those who have an interest in the effects of exercise on the human body. Credits: 4, Hours: (3/2/0/0), Prereq: BIO-173 or both BIO-177 & BIO-180; Arts & Sciences Elective Code: A

FIN: Finance

FIN-100 Introduction to Finance (3)
Introduces the exciting world of finance while exploring what happens on Wall Street. Explores financial markets, investing in stocks and bonds, making sense of financial information and the drivers of investment increases and decreases. Examines how financial decisions are made and how investments are analyzed. Students complete a number of simulation projects to demonstrate real world financial markets. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIN-101 Principles of Banking (3)
Presents the fundamentals of bank functions in a descriptive fashion so that beginning bankers can view their chosen profession in a broad perspective. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

FIN-110 Money and Banking (3)
Presents a fundamental treatment of how money functions in the U.S. and world economies. Topics include the concept of money supply and the role the bank plays as a money creator and participant in the nation's payment mechanism. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIN-121 Personal Finance (3)
Provides a comprehensive examination of the concepts and principles of personal finance and offers solid strategies for successful management and planning. Students learn planning, analyzing and controlling financial resources, and develop the knowledge and skills necessary to take advantage of favorable financial opportunities, resolve personal financial problems, achieve self-satisfaction and strive towards financial security. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

FIN-123 Entrepreneurial Finance (3)
Provides the financial tools necessary for successful entrepreneurs. Focuses on basic accounting principles, project start-up costs, budgets and cash flow projections. Includes financial statements, ratios and funding for starting a business. QuickBooks is used to prepare budgets and financial statements. Credits: 3, Hours: (3/0/0/0), Prereq: MGT-300; Arts & Sciences Elective Code: A; Comments: MGT-300 can also be taken as a corequisite

FIN-130 Principles of Finance (3)
Examines the tools and techniques used in the world of finance. Students are introduced to basic financial concepts such as time value of money, asset valuation, risk analysis and return on investment. Evaluation and decision-making techniques are used as they pertain to financial management in various business situations. Credits: 3, Hours: (3/0/0/0), Prereq: ACC-152, MAT-140; Arts & Sciences Elective Code: A

FIN-141 Consumer Lending (3)
Examines the role of consumer credit in overall banking operations. Offers an improved understanding of the consumer credit rules and regulations within a bank. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

FIN-170 Introduction to Commercial Lending (3)
Provides an introductory overview of the commercial lending function. It is divided into four sections: commercial lending overview, the lending process, portfolio management, and regulation and business development. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIN-178 Residential Mortgage Lending (2)
Reviews the steps in originating, processing and closing a mortgage loan. Examines the differences between FHA, VA and conventional loans; key regulations affecting residential mortgages such as Truth-in-Lending and RESPA; and basic features of AMLs, GPMs and other alternative mortgage loans. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

FIN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

FIN-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

FIR: Fire Science

FIR-105 Fire Science Career Orientation (2)
Provides the student with the knowledge and skills necessary to pursue a career in the fire service. Instructional units include working with paid firefighters on the job. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

FIR-110 History and Philosophy of the Fire Service (2)
Provides students with an understanding of where the fire service has come from so they can better help steer fire service into the future. Instructional units are facilitated through a guided self-study format. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

FIR-124 Building Construction (3)
Examines structural reactions to fire. Studies building codes and their relationship to the architectural strength of various designs. Covers how construction and design are key factors when inspecting buildings, preplanning fire operations and functioning at emergencies. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-125 Fire Behavior and Building Design (3)
Studies building construction as it relates to its reaction under fire conditions. Reviews building codes as related to the structural strength of various designs. Qualitative study of chemical and physical aspects of fuels, the combustion process and the products of combustion as these aspects apply to the causes, spread and extinguishing of a fire. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-127 Fire Behavior and Combustion (3)
Studies how the chemical and physical aspects of fuels, the combustion process and the products of combustion affect how fire is caused, spread and extinguished. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-130 Fundamentals of Fire Prevention (3)
Covers the techniques, procedures, regulations and enforcement of codes (fire, building, life safety) in various occupancies. Communication with the property owner on changes to meet code requirements are presented. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-140 Firefighter I - Unit I (2)
Helps firefighters or potential firefighters prepare for Firefighter I Certification. Topics include basic firefighting tactics, fire behavior, safety, forcible entry, hose handling, ladders, protective clothing, SCBA Rescue and Ventilation. Completing Skills I does not meet all criteria for testing for FFI Certification. Attendance is mandatory at all sessions. Equivalent to the 24-hour Basic Attack Course. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

FIR-141 Firefighter I - Unit II (2)
Continues to build on skills taught in Firefighting Skills I. Students learn new skills and advance their previous skills for preparation for the Firefighter I Exam. Topics include fire alarm communication, fire department organization, fire hose,

fire stream, water supplies, forcible entry and ventilation, ladders, organization, personal protective equipment and safety. Attendance for all sessions is mandatory. Class is graded on P/F (Pass/Fail) basis. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

FIR-142 Firefighter I - Unit III (3)
Builds on skills developed in Firefighting Skills I and II. Provides the student with knowledge of the topics covered on the Firefighter I written exam. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-146 Firefighting Tactics and Strategy (3)
Studies methods of coordinating personnel, equipment and deploying apparatus on the fire ground. Practical methods of controlling and extinguishing structural and other types of fires are discussed. Includes simulation exercises. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-150 Fire Detection and Suppression Systems (3)
Covers the identification of system elements, the proper type for the occupancy as per code, fire department operations at premises, and inspection practices to ensure the system is operating and installed as required. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-180 Chemistry of Hazardous Materials (3)
Covers properties of chemistry in fire service. Types of chemicals, processes and legal requirements are discussed as they pertain to use, storage and transportation of chemicals. Credits: 3, Hours: (2.5/1/0/0), Arts & Sciences Elective Code: B

FIR-183 Hazardous Materials Management (3)
Discusses the properties of chemically active substances related to hazardous materials. Identifies and demonstrates techniques, methods and strategies to mitigate haz-mat incidents. Covers state and federal laws as they relate to management of hazardous materials. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-213 Principles of Emergency Services (3)
Studies fire service nomenclature, career opportunities in fire protection, organization and function of fire protection services, laws and regulations affecting the fire service, and fire departments as part of local government. Includes job shadowing with career firefighters. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-280 Instructional Techniques for Fire Service Training (3)
Covers concepts and techniques for conducting periodic company-level or small-unit training. The course emphasizes teaching principles applicable to in-service fire and rescue service skills training. Course meets NFPA standard 1041, 1992 version - covers objectives for Fire Instructor I and II as specified in this standard. Successful completion of this course allows the student to meet Iowa Fire Instructor I and Iowa Fire Instructor II course requirements as specified by the certifying agency - Fire Service Institute or Iowa State University. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-289 Firefighter I - Unit IV (2)
Prepares and guides the student for the department assignments necessary to become certified as Firefighter I. Requirements include giving a public education presentation and reviewing standard and safe operating procedures of a department. Course also includes CPR certification. Students must pass the Firefighter I exam through the Fire Service Institute to become certified. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

FIR-330 Fire Service Company Officer (3)
Studies the company officer's role in the fire department. Students examine topics including effective communications, organization and management, resource management, leadership, safety, fire prevention and investigation, and pre-planning. The course is written to meet NFPA 1021, Fire Officer I, 2003 edition. Classroom experience consists of lecture with activities and exercises designed to reinforce the topic. Students are required to complete written assignments throughout the course, designed to meet the requirements of Fire Officer I. Credits: 3, Hours: (3/0/0/0), Prereq: FIR-146; Arts & Sciences Elective Code: B

FIR-400 Fire & Emergency Services Safety & Survival (3)
Introduces the basic principles and history related to national firefighter life safety initiatives. Focuses on the need for cultural and behavioral change across the emergency services. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FIR-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

FIR-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

FLC: Foreign Language - Chinese

FLC-141 Elementary Chinese I
Develops functional abilities in the Chinese (Mandarin) language. Focuses on using Mandarin Chinese in linguistically, socially and culturally appropriate ways. Covers listening, speaking, reading, writing and cultural aspects of communication. Open to students with little or no previous study of Chinese. Credits: 4, Hours: (4/0/0), Arts & Science Elective Code: A

FLC-142 Elementary Chinese II
Builds on language skills learned in Elementary Chinese I. Expands functional abilities in the Chinese (Mandarin) language and encourages improved use of Mandarin Chinese in linguistically, socially, and culturally appropriate ways. Focuses on listening, speaking, reading, writing and cultural aspects of communication. Credit: 4, Hours: (4/0/0), Prereq: FLC-141; Arts & Sciences Elective Code: A

FLF: Foreign Language - French

FLF-141 Elementary French I (4)
Introduces the 5 Cs of second language acquisition (communication, cultures, connections, comparisons and communities) by developing the fundamental communicative skills of listening, speaking, reading and writing, and providing the opportunity to examine the practices and products of various francophone cultures. Making comparisons and connections between the French and English language, practices, products and people is an important course component. Open to students with little or no previous study of French. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: A

FLF-142 Elementary French II (4)
Continues to develop the 5 Cs of second language acquisition (communication, cultures, connections, comparisons, and communities) by improving the fundamental communicative skills of listening, speaking, reading and writing acquired in Elementary French I. Examines the practices and products of francophone cultures. Includes discussion of the comparisons and connections that exist between various francophone cultures and language and our own. Credits: 4, Hours: (4/0/0/0), Prereq: FLF-141; Arts & Sciences Elective Code: A

FLF-241 Intermediate French I (4)
Develops the 5 Cs (communication, cultures, connections, comparisons and communities) by providing intensive practice in the fundamental communicative skills of listening, speaking, reading and writing, with a methodic study of different cultural contexts and a review of the basic grammar. Examines the cultural practices and products of francophone countries. Credits: 4, Hours: (4/0/0/0), Prereq: FLF-142; Arts & Sciences Elective Code: A

FLF-242 Intermediate French II (4)
Continues to develop the 5 Cs (communication, cultures, connections, comparisons and communities) by expanding the repertoire of realia (movies, readings, Internet explorations) and class activities. Provides continuous practice in developing the communicative skills and encourages group discussion about everyday subjects as well as the practices and products of francophone cultures. Credits: 4, Hours: (4/0/0/0), Prereq: FLF-241; Arts & Sciences Elective Code: A

FLF-924 Honors Project (1)
Allows a qualified student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

FLF-928 Independent Study (1-3)
Provides for individualized learning beyond courses offered on a regular basis. Students work directly with a faculty member on furthering proficiency in several different areas of the student's own choosing, e.g., reading comprehension, aural/oral proficiency, understanding of civilization and culture, etc. Credits: 1-3, Hours: (1-3/0/0/0),

Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

FLG: Foreign Language - German

FLG-141 Elementary German I (4)
Develops fundamental skills in German language. Emphasis is on acquiring the proficiency to communicate with the native speaker in everyday situations. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: A

FLG-142 Elementary German II (4)
Continues Elementary German I. Credits: 4, Hours: (4/0/0/0), Prereq: FLG-141; Arts & Sciences Elective Code: A

FLG-241 Intermediate German I (4)
Develops the students' ability to communicate in German in a culturally authentic mode. Students learn about the culture of the German-speaking world through authentic materials, discussions of how language and culture function in their own lives, and through activities designed to build skills in reading, writing, speaking and listening. Credits: 4, Hours: (4/0/0/0), Prereq: FLG-142; Arts & Sciences Elective Code: A

FLG-242 Intermediate German II (4)
Develops the students' ability to communicate in German in simple to complex language in a culturally authentic mode. Students build upon cultural analysis skills developed in Intermediate German I, to further develop language and cultural competencies. Uses digital video and has a large Web-based component. Expands basic communicative skills in speaking, listening, reading and writing. Credits: 4, Hours: (4/0/0/0), Prereq: FLG-241; Arts & Sciences Elective Code: A

FLG-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

FLG-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

FLS: Foreign Language - Spanish

FLS-118 Spanish for Professionals: Hospitality (3)
Introduces the Spanish language with a special focus on culinary arts and hospitality. Covers vocabulary, grammar, reading and listening comprehension, and emphasizes oral communication in culinary and hospitality settings. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

FLS-128 Conversational Spanish (3)
Develops conversational skills in the Spanish language. The emphasis is in acquiring proficiency in communicating in Spanish in work situations. Includes activities that promote basic Spanish grammar, specialized and everyday vocabulary and basic understanding of Latin American culture. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

FLS-141 Elementary Spanish I (4)
Develops fundamental skills in the Spanish language. Emphasis is on acquiring the proficiency to communicate with the native speaker in everyday situations. Includes activities that promote an understanding and knowledge of the Spanish-speaking peoples and their culture. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: A

FLS-142 Elementary Spanish II (4)
Allows the student to communicate with others on subjects of daily common experience in most informal and a limited number of formal conversations on activities related to family, work, health, friends, leisure activities, social life, environment, etc. The vocabulary used in this course is non-specialized, containing everyday words as well as frequently used expressions, all within a cultural context. Cultural facts from Hispanic and Latin American cultures will also be presented in the classroom. Credits: 4, Hours: (4/0/0/0), Prereq: FLS-141; Arts & Sciences Elective Code: A

FLS-241 Intermediate Spanish I (4)
Provides practice of language beyond the controlled situations of the elementary course. Develops fundamental skills in Spanish through activities aimed at expressing original ideas and conveying messages in correct Spanish with the aid of authentic resources. Class activities offer advanced training in listening, speaking, reading, writing, and understanding the cultures of Spanish-speaking countries. Grammar study includes a review of previously introduced topics as well as new ones. Credits: 4, Hours: (4/0/0/0), Prereq: FLS-142; Arts & Sciences Elective Code: A

FLS-242 Intermediate Spanish II (4)
Enables students to continue to develop all communication skills, using primarily materials from literature, contemporary newspapers and magazines aimed at providing a better understanding of the Hispanic and Latin cultures and pertinent current issues. Class activities include pronunciation exercises, some grammar review and class discussion that promotes spontaneous conversation. Credits: 4, Hours: (4/0/0/0), Prereq: FLS-241; Arts & Sciences Elective Code: A

FLS-266 Advanced Spanish: Latin American and Spanish Culture (3)
Develops communication skills through the study of the history, literature and cultures of the Spanish-speaking countries of the world. May emphasize a specific area (Spain, Mexico, Central America, South America) or explore common aspects of all or several areas. Conducted in Spanish. May be repeated (elective credit second time). Credits: 3, Hours: (3/0/0/0), Prereq: FLS-232; Arts & Sciences Elective Code: A

FLS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

FLS-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

GEO: Geography

GEO-115 Human Geography (3)
Emphasizes the application of geographic principles to contemporary social, economic and political problems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

GEO-121 World Regional Geography (3)
Surveys the world, region by region, emphasizing physical characteristics, patterns over time and population concerns. Examines current geographical issues, including economics, politics, socio-cultural affairs and environmental factors. Studies sub-regions: their uniqueness, their future, how people shape environments and how environments shape cultures. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

GEO-162 Geography of Iowa (3)
Emphasizes the application of geographic principles to the development of Iowa political, social, cultural, environmental and economic structures. Studies regions of Iowa and rural-urban issues. Introduces theory and methodology of geography. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

GEO-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

GEO-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

GIS: Geographic Information Systems

GIS-110 Survey of Geographic Information Systems (3)
Introduces the applications of geospatial technologies, including Global Positioning Systems (GPS) and Geographic Information Systems (GIS). Explores global reference and coordinate systems, maps and generalization, as well as types of maps. Studies the basic components and operation of GPS and GIS to develop an awareness of how they are used for data collection, analysis and decision-making in business, government and industry. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A;

Comments: Understanding of basic computer literacy concepts and experience using Windows operating system and applications software. CSC-110 Intro to Computers is recommended.

GIS-112 Introduction to ArcGIS (3)
Provides an overview of the applications of geographic information systems (GIS). Focuses on ArcView, the software used to create, analyze, and display spatial data in a geographic information system. Hands-on computer exercises provide practical experience in several disciplines including city/government planning, site location and transportation. Credits: 3, Hours: (2/2/0/0), Coreq: CSC-110; Arts & Sciences Elective Code: B

GIS-120 Geospatial Data Collection (3)
Provides detailed instruction and hands-on use of GPS receivers to collect field data. Students locate and download data from multiple sources and understand the steps necessary to use the data in GIS software. Introduces spatial analysis, remote sensing and Landsat imagery, raster data and map algebra. Credits: 3, Hours: (2/2/0/0), Prereq: GIS-110, GIS-112; Arts & Sciences Elective Code: B

GIS-122 Governmental GIS (3)
Introduces mapping concepts employed in city and county offices. Students learn to read legal documents, to use coordinate geometry in order to enter parcel data and how to import CAD files into GIS. Includes the use of topological relationships and GIS in land, transportation and environmental operations of local, county, state and federal government offices. Credits: 3, Hours: (2/2/0/0), Prereq: GIS-110, GIS-112; Arts & Sciences Elective Code: B

GIS-130 Remote Sensing (3)
Introduces students to working with remotely sensed data. Students study how Landsat imagery is created to develop an understanding of how to read the images. Uses imagery software to analyze images, classify pixels, and understand how remotely sensed data is used in monitoring and managing the earth's resources. Credits: 3, Hours: (2/2/0/0), Prereq: GIS-110, GIS-112; Arts & Sciences Elective Code: B

GIS-210 Mapping for Decision Making (3)
Provides a background in analyzing spatial data to make decisions. Students assemble data layers, discern patterns in the layers, construct maps necessary to analyze the data, and arrive at new information. Credits: 3, Hours: (2/2/0/0), Prereq: GIS-110, GIS-112; Arts & Sciences Elective Code: A

GIS-212 Managing GIS Projects (3)
Covers the steps necessary to develop and follow a project through to completion. Includes theories of management, tracking data and verifying that the completed task meets its intended purpose. Students work in teams to develop a project from start to finish. Credits: 3, Hours: (2/2/0/0), Prereq: GIS-110, GIS-112, GIS-122; Arts & Sciences Elective Code: A

GIS-214 Internet Mapping Services (3)
Introduces practical applications of Internet Mapping Services. Presents principles of cartography, data management and upkeep. Focuses on the uses of maps as user interfaces, the interactive elements of online maps, and creating and implementing online maps for specific audiences. Credits: 3, Hours: (2/2/0/0), Prereq: GIS-110, GIS-112, GIS-122; Arts & Sciences Elective Code: B

GIS-220 GIS Field Study (1-3)
Introduces the field of remote sensing. By analyzing remotely-sensed data in the lab and traveling to the site location, students describe the difference between real phenomena and how it is represented on a Landsat image. Uses aerial photography, topographic maps and Lidar Landsat imagery. Field work locations are determined annually by the GIS staff. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

GIS-240 GIS Projects (3)
Provides realistic experience in working on a GIS project. Students work with actual clients to complete a GIS project. Covers project communication, documentation and accuracy. Students conduct themselves as GIS professionals, meeting all necessary deadlines and goals communicated by the client. Credits: 3, Hours: (3/0/0/0), Prereq: GIS-110, GIS-112, GIS-122; Arts & Sciences Elective Code: B

GLS: Global Studies

GLS-110 Global Leadership (1)
Develops global perspectives and valuable skills necessary to effectively work in a global environment. Focuses on comparing and contrasting patterns of work-related and service practices in students' home countries versus the US. Students develop leadership, personal responsibility, communication, conflict resolution and negotiation skills. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

GLS-120 Education Experience Abroad (3)
Provides a structured cross-cultural experience, including pre-departure cultural orientation, in-country immersion experience and culminating project. Includes history, religion, geography, philosophy, literature, anthropology, culture, fine arts, food, language and other relevant topics. Includes a short-term study abroad experience with additional fees for travel. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

GRA: Graphic Communications

GRA-101 Survey of Graphic Communications (3)
Introduces the graphic communication industry, including traditional layout and design techniques, electronic/traditional publishing, bindery operations and Internet design basics. Introduces the fundamental processes used in the graphic communication industry. Covers two-dimensional design concepts and production preparation. Explores current graphic design computer applications, as well as the Apple OS as it relates to its interaction with printers, servers and design. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

GRA-127 Illustrator I (3)
Introduces Adobe Illustrator and its application in graphic communication. Learning activities include Adobe Illustrator tools as they apply to object (vector) based files, as well as Adobe Illustrator filters and layers. Students learn basic drawing and tracing techniques, creating line art, logos and learning how to simplify art work through stylizing. Creative use of type is also explored. Students learn how to set up color for reproduction. They also learn how to save and manage files created using these programs, as well as how these files interact with page layout and paint (raster) programs. Credits: 3, Hours: (2/2/0/0), Prereq: GRA-101; Arts & Sciences Elective Code: B

GRA-128 Illustrator II (3)
Continues to explore vector drawing tools as they apply to object based files using the program Adobe Illustrator. Learning activities include more advanced drawing techniques, creating art of medium to high quality, and continue learning how to simplify artwork through stylizing. Students learn how to set up color for reproduction. They also learn how to save and manage files created using these programs, as well as how these files interact with page layout and paint (raster) programs. Credits: 3, Hours: (2/2/0/0), Prereq: GRA-127, GRA-131; Arts & Sciences Elective Code: B

GRA-131 Digital Layout (3)
Provides working knowledge of the InDesign page layout program and its use in creating effective page layouts combining graphics and type. Topics include the toolbox and tool usage, importing and editing text and graphics, master pages, use of styles, text and paragraph formatting, general layout and design concepts, printing operations, importing graphics and setting up text styles, columns and grids. Students create various single- and spot-color documents including fliers, newsletters and other printed material. Credits: 3, Hours: (1/4/0/0), Prereq: GRA-101; Arts & Sciences Elective Code: B

GRA-132 Digital Layout II (3)
Expands knowledge of page layout programs using InDesign, including page setup, text and graphic frames, links management, use of spot and process colors within publications, how to color separate files, general layout and design concepts, and printing operations. Continues use of master pages, use of styles, text and paragraph formatting and effective use of type and graphics. Credits: 3, Hours: (2/2/0/0), Prereq: GRA-128, GRA-131; Arts & Sciences Elective Code: B

GRA-140 Digital Imaging (3)
Introduces electronic image editing software using Photoshop. Concepts covered include basic scanning techniques for grayscale and line art images; proper manipulation procedures required for various output sources, including input and output resolutions, file size, multiple file-saving formats, simple image enhancements and creating duo-tones; and creative application of Photoshop. Credits: 3, Hours: (2/2/0/0), Prereq: GRA-101; Arts & Sciences Elective Code: B

GRA-141 Digital Imaging II (3)
Introduces color correction theory and practices, image enhancements using third-party plug-ins, effective use of layers, paths, adding type to images and color correction controls to create visually effective images. Strong emphasis is placed on properly preparing images for printing

and publishing. Use of Photoshop for Web page design is also explored. Credits: 3, Hours: (2/2/0/0), Prereq: GRA-140; Arts & Sciences Elective Code: B

GRA-152 Web Design II (4.5)
Provides students with the knowledge to design a Web page using DHTML and other resources to incorporate animation and interactivity on their Web pages. Also covered are building forms and utilizing JavaScript on Web pages. Students are responsible for designing all elements of their own Web page. Credits: 4.5, Hours: (3/3/0/0), Prereq: GRA-140, CIS-207; Arts & Sciences Elective Code: B

GRA-153 Web Media II (3)
Continues Web content development and interactivity using Flash, Illustrator and Photoshop as the primary tools. Explores intermediate video editing and enhancement using Adobe Premier and After Effects. Requires working through Web content scenarios and developing Web design layouts, navigation interactivity, Web animations and multimedia applications. Interactive content and design are used in students' final Graphic Communication portfolio. Credits: 3, Hours: (1/4/0/0), Prereq: GRA-127, GRA-131, GRA-140; Arts & Sciences Elective Code: B

GRA-192 Production Techniques (4.5)
Provides real and realistic hands-on experience, building on skills learned to date. Covers pre- and post-production project issues for both print and Web. Emphasizes managing multiple projects and deadlines, and working with other people, in part through a storefront scenario. Students work with actual clients in a team-based (company) operation, present packaging design and production, then practice design, output and proofing options. Students develop and present an analog portfolio of their graphic design and production skills. Credits: 4.5, Hours: (1/7/0/0), Prereq: CIS-207, GRA-128, GRA-132, GRA-140, GRA-195; Arts & Sciences Elective Code: B

GRA-195 Introduction to Web Media (3)
Provides introductory skills in Web content development and interactivity using Flash, Illustrator and Photoshop as the primary tools. Students work through textbook-based Web content scenarios to develop Web design concepts, layouts, navigation and interactivity, as well as Flash-based Web animations. Students develop interactive content and design to be used in their final (GRA-151) Web Design project. Credits: 3, Hours: (2/2/0/0), Prereq: GRA-127, GRA-131; Arts & Sciences Elective Code: B

GRA-199 Graphic Communication Job Shadowing (1)
Provides an opportunity to receive experience through job shadowing sessions with an approved graphic communications business. Students receive valuable learning experience in area businesses. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

GRA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

GRA-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

HCM: Hospitality, Culinary, Management

HCM-100 Sanitation and Safety (2)
Studies basic principles of bacteriology, food borne illness, sanitation, workplace safety, personal hygiene, food security, health regulations and inspections. Emphasizes the importance of sanitary equipment and facilities, and pest control. Students must complete the National Restaurant Association Educational Foundation certification exam to pass this course. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

HCM-109 Kitchen Essentials (1.5)
Familiarizes students with standard operating procedures, employee practices and the tools and equipment used in a commercial food service operation. Students practice skills in work simplification, equipment operation and cleaning, recipe writing and standardization. Emphasizes food sanitation, personal hygiene and safety in the kitchen. Credits: 1.5, Hours: (.5/2/0/0), Coreq: HCM-100, HCM-260; Arts & Sciences Elective Code: B

HCM-117 Bakery Basics (3)
Provides theory on basic baking methods and lab experience in preparing bakery products. Emphasizes yeast products, quick breads, pies, cakes, pastry doughs, custards, puddings and cookies. Stresses bakery procedures, scaling techniques, weighing, measuring, use and care of equipment, sanitation and safety, work simplification, costing and the production of high quality baked products. Credits: 3, Hours: (1/4/0/0), Coreq: HCM-100, HCM-260; Arts & Sciences Elective Code: B

HCM-122 International Breads (3)
Provides expanded theory on bread baking, and additional lab experience in preparing yeast and quick bread products. Includes identification of special ingredients, traditional shaping techniques, costing and selection of ingredients, preparation procedures, use and care of bakery equipment, sanitation and work simplification. Introduces the history and traditional uses of breads. Credits: 3, Hours: (1/4/0/0), Prereq: HCM-117, HCM-125, HCM-126; Arts & Sciences Elective Code: B

HCM-123 International Pastries (3)
Provides additional theory and lab experience in preparing pastries representative of cultural traditions of the world. Stresses bakery procedures, use and care of equipment of bakery equipment, sanitation, safety, work simplification, costing and production of high quality pastry items. Includes research into cuisines of the world and associated pastries. Credits: 3, Hours: (1/4/0/0), Prereq: HCM-117, HCM-125, HCM-126; Arts & Sciences Elective Code: B

HCM-125 Basic Cake Decorating (1)
Provides instruction for the beginning cake decorator. Emphasizes practical border work, cake writing, figure piping, flowers, wedding cake assembly and airbrushing. Students utilize decorator's tools, practice basic decorating design, techniques and develop artistic creativity. Equipment required. Credits: 1, Hours: (0/2/0/0), Prereq: HCM-100; Arts & Sciences Elective Code: B

HCM-126 Science of Baking (2)
Introduces food science principles as applied to baking and pastry arts. Explores the functions of bakery ingredients using scientific methods. Students create, compare and revise recipes with an emphasis on quality, nutrient content and cost. Introduces sensory evaluation of food. Credits: 2, Hours: (1/2/0/0), Prereq: HCM-100; Arts & Sciences Elective Code: B

HCM-127 Advanced Cake Decorating (1)
Provides advanced skills in the art of cake decorating, including fondant icing and its use in the baking industry; designing tiered and multi-leveled cakes; and making decorations and floral arrangements with gum. Credits: 1, Hours: (0/2/0/0), Prereq: HCM-125; Arts & Sciences Elective Code: B; Comments: Equipment needed.

HCM-130 Plated Desserts (1)
Provides experience in the preparation of fine dining style-plated desserts. Students rotate through different dessert components making sauces, pastries, mousses, fillings, cakes, and ice creams. Students learn how to work with chocolate, pastillage, cooked sugar and pastry garnishes, adding extra dimension to desserts. Each week the class focuses on new desserts, learning how to plate and serve sweet works of art. Credits: 1, Hours: (0/2/0/0), Prereq: HCM-117; Arts & Sciences Elective Code: B

HCM-133 Fabrication I (1.5)
Studies the fabrication of meats including beef, pork, poultry and fish in a lab setting. Stresses proper cooking methods for various cuts, and the importance of cooking and yield tests. Emphasizes proper kitchen procedures, use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 1.5, Hours: (.5/2/0/0), Prereq: HCM-100, HCM-138; Arts & Sciences Elective Code: B

HCM-134 Fabrication II (1.5)
Studies the fabrication of meats including lamb, veal, seafood, duck, quail, pheasant and offal in a lab setting. Stresses proper cooking methods for various cuts, and the importance of cooking and yield tests. Emphasizes proper kitchen procedures, use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 1.5, Hours: (.5/2/0/0), Prereq: HCM-133; Arts & Sciences Elective Code: B

HCM-138 Food Fundamentals (3)
Studies the composition of foods and the scientific principles involved in food preparation. Emphasizes basic food handling competencies and cookery techniques. Students work with herbs, spices, dairy, eggs, fruits, vegetables, starches, stocks, sauces and soups, learning to produce quality products. Focuses on the development of proper kitchen procedures, use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 3, Hours:

(1/4/0/0), Prereq: HCM-147; Coreq: HCM-100, HCM-260; Arts & Sciences Elective Code: B

HCM-147 Culinary Techniques (1.5)
Introduces fundamental cookery methods in a blended lab and theory environment. Explores the theory behind cookery methods before applying that theory when producing various dishes. Introduces moist heat, dry-heat and combination cookery methods. Emphasizes knife skills and the use and care of kitchen equipment, sanitation, safety, kitchen procedures, cost control and efficient work methods. Credits: 1.5, Hours: (.5/2/0/0), Prereq: HCM-109; Coreq: HCM-100, HCM-260; Arts & Sciences Elective Code: B

HCM-161 Stocks and Sauces (1.5)
Develops student understanding of and practical skills in the production of stocks, sauces and a variety of condiments. Emphasizes modern and classical sauce techniques. Develops general kitchen production skills through repeated performance. Reinforces proper use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 1.5, Hours: (.5/2/0/0), Prereq: HCM-100, HCM-138; Arts & Sciences Elective Code: B

HCM-166 Culinary Arts (4)
Emphasizes advanced culinary competencies while rotating through various stations in a full-service, operating restaurant kitchen. Requires hands-on food preparation experience at breakfast, lunch and dinner in the restaurant. Emphasizes proper kitchen procedures, kitchen management, team work, use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 4, Hours: (2/0/6/0), Prereq: HCM-117, HCM-134, HCM-181, HCM-269; Arts & Sciences Elective Code: B

HCM-174 International Cuisine (lab) (3)
Introduces various international cuisines and their ingredients, preparation methods and cultural influences. Provides further practical experience in preparing quality food, and practice in following standard recipes to prepare a variety of dishes with varying degrees of difficulty. Students work individually and produce their own work independent of others in the class. Emphasizes critical thinking skills as students evaluate their completed dishes. Reinforces proper kitchen procedures, care and use of equipment, sanitation, safety, cost control and efficient work methods. Credits: 3, Hours: (1/4/0/0), Prereq: HCM-134, HCM-138; Arts & Sciences Elective Code: B

HCM-181 International Cuisine (4)
Introduces various international cuisines and their ingredients, preparation methods and cultural influences. Provides further practical experience in preparing quality food, and practice in following standard recipes to prepare a variety of dishes with varying degrees of difficulty. Students work individually and produce their own work independent of others in the class. Emphasizes critical thinking skills as students evaluate their completed dishes. Reinforces proper kitchen procedures, care and use of equipment, sanitation, safety, cost control and efficient work methods. Credits: 4, Hours: (1/6/0/0), Prereq: HCM-134, HCM-138; Arts & Sciences Elective Code: B

HCM-190 Bakery Essentials (1)
Familiarizes students with standard operating procedures, and the tools and equipment used in a commercial bakery. Students practice skills in: work simplification, mixing techniques, ingredient identification, equipment operation and cleaning, recipe writing and standardization. Emphasizes food sanitation, personal hygiene and safety in the bakery. Credits: 1, Hours: (0/2/0/0), Coreq: HCM-100; Arts & Sciences Elective Code: B

HCM-204 Service Techniques (3)
Defines and describes points of service in restaurant and banquet functions. Discusses sales techniques, cash handling standards, methods of customer satisfaction, and other topics related to the smooth operation of any restaurant or catered event. Requires hands-on experience at breakfast, lunch and dinner in a full-service restaurant. Emphasizes proper service procedures, cost control and efficient work methods. Credits: 3, Hours: (1/0/6/0), Prereq: HCM-100; Arts & Sciences Elective Code: B

HCM-213 Service Management (Lab) (4)
Allows students to perform as supervisors and managers in the dining areas. Requires management techniques and theories in working with others to create a successful restaurant environment, under the direction of professional staff. Emphasizes computer application in analyzing food and beverage costs, labor costs and other operating costs as applied to The Class Act restaurant. Credits: 4, Hours: (2/0/6/0), Prereq: HCM-260, HCM-204; Arts & Sciences Elective Code: A

HCM-227 Menu Planning (1)
Studies the principles of menu marketing and management. Students write and analyze menus for various population groups, types of food service facilities and service styles, then design a menu cover. Upon successful completion of a national test, students are certified by the National Restaurant Association Educational Foundation. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

HCM-231 Nutrition (2)
Reviews basic nutritional concepts in relation to current health concerns and the food service industry. Includes practice in recipe and menu modification to improve nutrition. Upon successful completion of a national test, students are certified by the National Restaurant Association Educational Foundation. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

HCM-233 Menu Planning & Nutrition (3)
Studies the principles of planning menus, considering population groups, types of food service operations, kitchen management, nutrition and writing menus. Review basic nutritional concepts in relation to current health concerns. Practice recipe and menu modifications to improve nutrition. Design menu covers. Field trips are required. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HCM-251 Purchasing, Receiving and Inventory (2)
Studies principles in purchasing, receiving, issuing and inventory management. Emphasizes cost management techniques. Students practice skills in a clinical lab experience supervised by the purchasing manager. Upon successful performance on a national test, students are certified by the National Restaurant Association Educational Foundation. Credits: 2, Hours: (1/0/3/0), Prereq: HCM-100, HCM-260; Arts & Sciences Elective Code: B

HCM-256 Cost Control and Merchandising (3)
Defines and describes the cost control process in a foodservice operation. Emphasizes cost control methods in the purchasing, receiving, storage, production and service stages. Practices specification writing, recipe costing, menu pricing and product yield tests. Offers basic instruction in bakery merchandising, and opportunities to create bakery product displays. Credits: 3, Hours: (3/0/0/0), Prereq: HCM-260; Arts & Sciences Elective Code: B

HCM-260 Hospitality Math (3)
Reviews the fundamentals of mathematics, including calculating percent, ratios, decimals, fractions, weights and measures, and introductory algebra concepts. Emphasizes application of mathematical fundamentals to a variety of culinary and hospitality use. Includes equivalencies, recipe costing and conversion, calculating food and labor cost percentages, baker's percentages, yield conversions, and selling prices. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HCM-268 Baking for Dietary Restrictions (2)
Provides fundamental knowledge necessary to accommodate baking for customers with restrictive dietary needs, including diabetes, celiac intolerance, heart conditions and common allergies. Focuses on comparing, revising and producing recipes in a lab environment, with an emphasis on evaluating product quality and ingredients relative to special needs baking. Credits: 2, Hours: (1/2/0/0), Prereq: HCM-100, HCM-117, HCM-122, HCM-123, HCM-126, HCM-260; Arts & Sciences Elective Code: B

HCM-269 Garde Manger (lab/lec) (1.5)
Introduces basic cold food preparation and presentation, including sandwiches, salads, salad dressings and simple cold appetizers. Emphasizes proper kitchen procedures, use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 1.5, Hours: (.5/2/0/0), Prereq: HCM-100, HCM-138; Arts & Sciences Elective Code: B

HCM-273 Advanced Garde Manger (3)
Studies advanced techniques in cold food preparation and presentation techniques. Emphasizes chaudfroid, aspics, pates, galantines, ballotines, terrines, hors d'oeuvre, charcuterie and food decorating. Focuses on proper kitchen procedures, use and care of equipment, sanitation, safety, cost control and efficient work methods. Credits: 3, Hours: (1/4/0/0), Prereq: HCM-134, HCM-181, HCM-269; Arts & Sciences Elective Code: B

HCM-279 Hospitality Accounting (3)
Provides an understanding of basic accounting concepts and procedures relevant to hotel and food service operations. Includes recording transactions, understanding financial statements, managing inventory, payroll problems, occupancy issues and other special topics. Credits: 3, Hours:

(3/0/0/0), Prereq: HCM-260; Arts & Sciences Elective Code: B

HCM-290 Wedding Cake Decorating (1)
Provides theory and experience in designing and preparing traditional and contemporary multi-layered wedding cakes. Includes the process of taking cake orders from customers, and procedures required for delivery and set up of wedding cakes. Studies current trends related to wedding cake production. Credits: 1, Hours: (0/2/0/0), Prereq: HCM-100, HCM-125; Arts & Sciences Elective Code: B

HCM-302 Alcohol Service (0.5)
Studies the fundamentals of responsible alcohol service. Includes current liquor laws, intoxication issues, checking identification and handling difficult customer situations. Upon successful performance on a national test, students are certified by the National Restaurant Association Educational Foundation. Credits: .5, Hours: (.5/0/0/0), Arts & Sciences Elective Code: B

HCM-310 Hospitality Law (3)
Reviews legal subjects relevant to the hospitality industry. Emphasis on government regulations, food and liquor liability, patron rights and safety, employer/employee rights and responsibilities, the court system, and business management. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HCM-315 Wine, Beer and Spirits Basics (3.5)
Identifies characteristics of alcoholic beverage classifications including wine, beer and spirits. Describes fermentation, brewing and distillation. Reviews alcoholic service basics and beverage control laws. Weighted toward wine, this class introduces wine classifications, characteristics, tasting and pairings with food. Credits: 3.5, Hours: (2.5/2/0/0), Arts & Sciences Elective Code: B

HCM-317 Advanced Wine, Beer and Spirits (3)
Expands upon knowledge and enhances skills acquired in prerequisite to improve students' ability to critically taste wine, beer and spirits. Emphasizes the relationship between food and alcoholic beverages. Introduces mixology and bar management. Credits: 3, Hours: (2/2/0/0), Prereq: HCM-315; Arts & Sciences Elective Code: B

HCM-321 Introduction to Hospitality Industry (1)
Develops an understanding of the hospitality industry and career opportunities in close cooperation with the college's Career Services department. Students create an education and career portfolio. Credits: 1, Hours: (1/0/0/0), Coreq: HCM-324; Arts & Sciences Elective Code: B

HCM-324 College Orientation (1)
Provides group orientation and activities for hospitality students enrolled in applied science programs. Reviews program requirements, along with department and college policies and procedures. Focuses on academic planning, identifying campus resources and being a successful student at Kirkwood. Includes introduction of academic and career portfolio development. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

HCM-326 Basic Hospitality Communications (3)
Allows students to improve English writing skills (grammar and mechanics), listening skills, phone and e-mail etiquette, and basic customer service skills. Enhances skills through exercises applicable to the hospitality industry. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-013; Arts & Sciences Elective Code: B

HCM-330 Hospitality Personnel Management (3)
Introduces the functions of human resource management, including, planning, communicating, recruiting, hiring, training, coaching, counseling, discipline, performance evaluation, termination and labor relations. Emphasizes the legal issues related to managerial decisions, motivation and managing diversity. Students are certified by the National Restaurant Association Educational Foundation upon successful performance on the national test. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HCM-340 Hospitality Events and Catering (FOH) (3)
Applies and refines, in a rigorous practical setting, competencies mastered in previous course work within the Culinary Arts program. Students must demonstrate front-of the-house management skills as they plan, produce and successfully execute college catering events. Emphasizes quality product and service, financial performance, teamwork and customer satisfaction, along with demonstrated mastery of refined competencies. Credits: 3, Hours: (1/0/6/0), Prereq: HCM-213, HCM-227; Arts & Sciences Elective Code: B; Comments: Students must be flexible to attend class during the day, evenings and weekends

HCM-342 Hospitality Events and Catering (BOH) (3)
Applies and refines, in a rigorous practical setting, competencies mastered in previous course work within the Culinary Arts program. Students must demonstrate back-of the-house management skills as they plan, produce and successfully execute college catering events. Emphasizes quality product and service, financial performance, teamwork and customer satisfaction, along with demonstrated mastery of refined competencies. Credits: 3, Hours: (1/0/6/0), Prereq: HCM-166, HCM-177, HCM-227, HCM-231; Arts & Sciences Elective Code: B; Comments: Students must be flexible to attend class during the day, evenings and weekends

HCM-402 Culinary Competition (2)
Emphasizes skills and techniques for preparing foods for culinary competitions. American Culinary Federation culinary guidelines are followed. Students prepare showpieces and platters, and participate in culinary shows and competitions. Credits: 2, Hours: (0/4/0/0), Prereq: HCM-181; Arts & Sciences Elective Code: B

HCM-404 Culinary Travel Studies (1-3)
Focuses on the history, culture and cuisine of a specific geographic region, with the major emphasis on cuisine. This course is offered for variable credit and includes a study tour of a specific geographic region. May be repeated for credit. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: B

HCM-596 Uniformed Services (2)
Defines and describes the various positions within the uniform services department of a hotel. Provides hands-on experience by a rotation through various stations: bell stand, valet parking, door attendant and concierge. Credits: 2, Hours: (1/0/3/0), Prereq: HCM-600; Arts & Sciences Elective Code: B

HCM-597 Front Office Management (4)
Presents a systematic approach to front office procedures by detailing the flow of business through the entire guest cycle. Examines the various elements of effective front office management including forecasting and revenue management, front office planning and operation, and management of human resources. Requires students to perform various duties throughout the front office. Prepares the student for an externship at a select-service hotel or rooms division position at a full-service property. Credits: 4, Hours: (2.5/0/4.5/0), Prereq: HCM-600; Arts & Sciences Elective Code: B

HCM-599 Engineering and Risk Management (1)
Provides exposure to various mechanical systems within a hotel, including fire suppression, heating and cooling, geothermal, kitchen and laundry equipment, surveillance systems, communication systems, alarm systems and guestroom security equipment, such as locks. Discusses guest protection and internal security for asset protection. Explores risk management and loss prevention issues and outlines OSHA regulations that apply to lodging properties. Credits: 1, Hours: (1/0/0/0), Prereq: HCM-597, HCM-602; Arts & Sciences Elective Code: B

HCM-600 Introduction to Lodging Operations (2)
Provides students with an overview of the lodging industry and how its functions are organized and operated. Each of the seven traditional disciplines is introduced: general management, hotel sales, financial control, rooms operations, food and beverage operations, human resources, and physical plant maintenance. Business ethics and effective communication are also emphasized. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

HCM-601 Housekeeping and Laundry Operations (3)
Provides students with the principles of housekeeping management and laundry operations in the hotel industry. Emphasizes direct day-to-day operations, from big-picture management issues such as inventory and human resources, to technical details for cleaning each hotel area. Gives students the opportunity to learn first-hand the duties of hotel room attendants and to work in the hotel laundry. Credits: 3, Hours: (1.5/0/4.5/0), Coreq: HCM-600; Arts & Sciences Elective Code: B

HCM-602 Introduction to Food and Bar Operations (3)
Focuses on the management of food and beverage operations in lodging establishments. Includes stewarding, banquets, restaurant, beverage and room service. Prepares students for internships in lodging operations. Credits: 3, Hours: (3/0/0/0), Prereq: HCM-600; Arts & Sciences Elective Code: B

HCM-603 Hotel Sales and Catering (3)
Examines sales department activities related to group and transient business. Includes developing leads, building relationships, closing the sale, servicing groups and account follow-up/maintenance. Discusses group meeting trends and practices. Explores the discipline of revenue management to determine the applicability of revenue maximization strategies and their operational aspects. Students will be given the opportunity to experience a professional sales and catering department first-hand by working with The Hotel Sales & Catering staff. Credits: 3, Hours: (2/0/3/0), Prereq: MKT-110, HCM-932; Arts & Sciences Elective Code: B

HCM-614 Leadership in Hospitality (3)
Examines the profound difference between management and leadership in the hotel industry. Utilizes case studies to explore power and empowerment, quality management, high-performance teams, ethics and various management philosophies. Requires utilization of competencies mastered in previous course work within the Hotel Management program as students participate in The Hotel's Manager on Duty (MOD) program. Students must be flexible in assuming MOD shifts which will encompass evenings, weekend and overnights. Credits: 3, Hours: (2/0/3/0), Prereq: HCM-597, HCM-602, HCM-932; Arts & Sciences Elective Code: B

HCM-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HCM-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

HCM-932 Internship (0.5-4)
Provides an opportunity to receive on-the-job training at The Hotel at Kirkwood Center. Maximizes exposure and training depth through learning experiences structured by the program coordinator and training sponsor. May focus on one position/department or may be structured to encompass numerous areas within the hotel. Credits: .5-4, Hours: (0/0/0/32-256), Prereq: HCM-597, HCM-602; Coreq: HCM-213, HCM-599; Arts & Sciences Elective Code: B

HCM-932 Internship (0.5-4)
Provides an opportunity to receive on-the-job training at The Hotel at Kirkwood Center. Maximizes exposure and training depth through learning experiences structured by the program coordinator and training sponsor. May focus on one position/department or may be structured to encompass numerous areas within the hotel. Credits: .5-4, Hours: (0/0/0/32-256), Prereq: HCM-597, HCM-602; Coreq: HCM-213, HCM-599; Arts & Sciences Elective Code: B

HCM-933 Hotel Externship (1-4)
Provides an opportunity to receive on-the-job training at an approved hotel. Maximizes exposure and training depth through learning experiences structured by the program coordinator and the training sponsor. May focus on one position/department or may be structured to encompass numerous areas within the hotel. Credits: 1-4, Hours: (0/0/0/4-16), Prereq: HCM-597, HCM-602; Arts & Sciences Elective Code: B

HCR: Heating and Air Conditioning

HCR-410 Electrical Applications I (3)
Covers general knowledge of basic electrical applications used by industry. Use of basic electrical equipment including multimeters is stressed. Topics include current, voltage, resistance, symbols and basic AC and DC circuits. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

HCR-450 Electrical Apps for HVAC II (3)
Continues the coverage of electrical applications used by HVAC installers. Students learn a more thorough explanation of voltage and current, including basic measuring techniques and safety concerns. Motors and transformers in their typical applications are also included. Credits: 3, Hours: (2/2/0/0), Prereq: HCR-410; Arts & Sciences Elective Code: B

HCR-600 Pipe Joining Methods (3)
Covers the correct techniques to use when joining pipes. Students learn correct techniques for making a solder joint, a brazed joint and a threaded joint. Alternative techniques are also taught, including flare, crimp and compression. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

HCR-605 HVAC Installation I (5)
Provides a comprehensive introduction to designing and installing HVAC systems. Students learn sheet metal fabrication and installation, basic principles of heat transfer, and the basic refrigeration cycle applied to air conditioning. Credits: 5, Hours: (2/6/0/0), Arts & Sciences Elective Code: B

HCR-610 HVAC Installation II (7)
Provides a comprehensive introduction to designing and installing HVAC systems. Other topics covered include refrigerant handling procedures, gas piping and sizing, chimney and vent calculations, and the uniform mechanical code. Credits: 7, Hours: (3/8/0/0), Prereq: HCR-605; Arts & Sciences Elective Code: B

HCR-710 Fundamentals of Plan and Print Reading (2)
Covers the fundamentals of blueprints and floor plans used for common layouts. Includes dimensions, specifications and interpretation of details found on typical sets of plans. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

HCR-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HCR-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

HCR-932 Internship (1-3)
Focuses on providing the student practical experience in an HVAC related work environment. Includes employer/supervisor evaluations and instructor visits/interview. Credits: 1-3, Hours: (0/0/0/4-12), Arts & Sciences Elective Code: B

HIS: History

HIS-121 Ancient Mediterranean World (3)
Surveys the cultural, religious, political and social heritage of the ancient Near Eastern people as the foundation of Western civilization. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-122 Europe in the Age of Monarchy (3)
Explores the social, cultural, intellectual, economic and political foundations of Western civilization in Europe from the Middle Ages to Absolutism and Constitutionalism. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-123 Europe in the Age of Revolution (3)
Studies four revolutions - the Scientific, French, Industrial and 19th Century Liberal revolutions - that changed the traditional Western society into the modern world. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-124 Europe in the Age of Nationalism (3)
Examines themes of modern European civilization. Emphasis is on the development of nationalism, the rise of Communism and Fascism, and the changes in the present society. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-135 Modern World Military History (3)
Examines the development of modern warfare from the Napoleonic Era to the present, using a multi-disciplinary approach. Focuses on how national and international politics, technology, social issues, economics, religion, and ideology shape military policy, expectations, outcomes and cultural expressions. Concentrates on key conflicts throughout multiple regions to illustrate the evolving dynamics of strategy and tactics. Discusses warfare's different forms: conventional, guerrilla and nuclear. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-151 U.S. History to 1877 (3)
Studies the European background, the colonial experience, the revolutionary period and 19th century history to the Civil War. Includes political, economic and social history of this period as well as the development of American thought. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-152 U.S. History Since 1877 (3)
Studies the period from reconstruction to the present. Emphasis is upon industrialization and its impact; the development of a strong federal government; an aggressive foreign policy; and a growing involvement in an international economy.

Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-221 Holocaust and Genocide in Memory and Literature (3)
Explores the reasons for the Holocaust and the nature and history of anti-Semitism. Analyzes why the Holocaust/Final Solution occurred in Germany. Studies resistance and both collaboration and resistance between Nazism and foreign countries. Compares the Holocaust aimed at the extermination of the Jews with genocide and extermination of other groups in history. Uses a comparative framework. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-254 American Indian History (3)
Examines American Indian societies from the colonial era to the present, using a cross-cultural framework focusing on six major geographical areas of the United States: New England and the Northeast, the Southeast, the Great Lakes region, the Plains, the Southwest and the Northwest. Emphasizes American Indian cultures, including religion and socio-political structure. Examines American Indian responses to federal Indian policy, including removal, allotment and termination, as well as present-day issues related to revitalization. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-291 History of Science (3)
Covers major aspects of the history of science from the early modern period into the 20th century. As this is a history course, not a science or technology course, the emphasis is on the historical backgrounds of various scientific ideas. The course focuses on some of the major figures in the development of modern Western science including Newton, Darwin, Faraday and Einstein. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HIS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contact. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HIS-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

HIT: Health Information Technology

HIT-220 Introduction to Medical Coding (2.5)
Studies basic disease and procedural coding of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). Credits: 2.5, Hours: (2.5/0/0/0), Coreq: BIO-168, HIT-360, HSC-115; Arts & Sciences Elective Code: B

HIT-240 Advanced Coding and Classification (3)
Continues more complex concepts of disease and procedural coding of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). Introduces procedural coding utilizing the Current Procedural Terminology, 4th Edition (CPT-4) classification system. Includes practical application of coding inpatient and outpatient records. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-168, HIT-220; Coreq: BIO-173; Arts & Sciences Elective Code: B

HIT-280 CPT-4 Coding (3)
Continues more complex concepts of procedural coding utilizing the Current Procedural Terminology, 4th Edition (CPT-4) classification system. Includes practical application of coding outpatient/ambulatory records. Credits: 3, Hours: (3/0/0/0), Prereq: HIT-240; Arts & Sciences Elective Code: B

HIT-291 Reimbursement Methods (2.5)
Introduces prospective payment systems for inpatient health care (Diagnosis Related Groups-DRG) and ambulatory health care (Ambulatory Patient Classifications-APC). Explores Local Coverage Determination (LCD) and the Resource Based Relative Value System (RBRVS). Focuses on fraud and abuse issues, coding compliance, and the National Correct Coding Guide. Includes practical application of diagnosis and procedural coding as well as DRG and APC assignment. Credits: 2.5, Hours: (2.5/0/0/0), Prereq: HIT-240; Arts & Sciences Elective Code: B

HIT-350 Health Information Systems (2.5)
Provides an overview of the use of automated information systems in the health care delivery system. Introduces terminology and essential concepts of health information systems and management of data. Examines data integrity and privacy/security issues affecting the access to and use of patient information. Credits: 2.5, Hours: (2.5/0/0/0), Prereq: CSC-110, HIT-360; Arts & Sciences Elective Code: B

HIT-360 Introduction to Health Information Technology (3)
Provides an overview of the health information management profession, and the development, content and analysis of medical records in health care settings. Students will learn the importance of health information management in reimbursement and different classification systems. Includes legal issues in medical records, patient confidentiality, form construction and design, numbering systems, indexes, and registries. Explores health information storage and retention systems and computerization of health records. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HIT-420 Legal Aspects of Health Information (2)
Includes use of the medical record as a legal document, release of information, consents, the medical record in legal proceedings and an overview of current health legislation. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

HIT-431 Quality Improvement (3)
Focuses on quality assessment and performance improvement in health care settings and the role of health information management professionals in quality improvement, utilization management, credentialing and risk management. Simulations of quality assessment and utilization management functions, the role of peer review organizations and their impact on health information are included. Credits: 3, Hours: (3/0/0/0), Prereq: HIT-360; Arts & Sciences Elective Code: B

HIT-450 Health Statistics (2)
Emphasizes abstracting of medical records and computer input of data. Includes basic arithmetical and statistical principles, hospital statistics and formulas, vital and public health data sources. Discusses presentation of data and data quality. Credits: 2, Hours: (2/0/0/0), Prereq: HIT-360, MAT-731; Arts & Sciences Elective Code: B

HIT-490 Health Management and Supervision (3.5)
Provides basic principles of personnel supervision including developments and considerations vital to the performances of supervisors in today's health care environment. Credits: 3.5, Hours: (3.5/0/0/0), Prereq: HIT-552; Arts & Sciences Elective Code: B

HIT-495 Medical Office Management (2.5)
Present concepts and procedures in relation to medical office management, phone etiquette, patient scheduling, patient medical recordkeeping, manual and computerized bookkeeping, and ordering of office supplies. Credits: 2.5, Hours: (2.5/0/0/0), Arts & Sciences Elective Code: B

HIT-550 Professional Practice Experience I (2.5)
Combines the theory of health information management with supervised practice in selected health care settings. Introduces the student to the Health Information Management/Medical Record department, its specific health information systems, filing systems, numbering systems, indexes, registries, etc., including health care provider specific coding practices. Coordinated by the college. Credits: 2.5, Hours: (0.5/0/6/0), Coreq: HIT-220, HIT-360; Arts & Sciences Elective Code: B

HIT-551 Professional Practice Experience II (1)
Combines the theory of health information management in a physician's office. Provides practical application in specific health information systems, filing systems, numbering systems and provider specific coding practices. Coordinated by the college. Credits: 1, Hours: (1/0/0/0), Prereq: HIT-550; Arts & Sciences Elective Code: B

HIT-552 Professional Practice Experience III (3)
Combines the theory of health information management in selected health care settings with experiences in health information systems, quality assurance, coding of diseases and procedures, and medical record management. Credits: 3, Hours: (0/0/9/0), Prereq: HIT-551; Arts & Sciences Elective Code: B

HIT-553 Professional Practice Experience IV (3)
Combines the theory of health information management in selected health care settings. Provides practical application in specific health information systems, filing systems, numbering systems, indexes, registries, etc., including provider specific coding practices. Coordinated by the college. Credits: 3, Hours: (3/0/0/0), Prereq: HIT-552; Arts & Sciences Elective Code: B

HIT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts &

Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HIT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

HSC: Health Sciences

HSC-103 Studies in Health Sciences (0.5-3)
Provides readings, papers, seminars and basic research or other projects/assignments under the individual guidance of a faculty member. Credits: .5-3, Hours: (.5-3/0/0/0), Arts & Sciences Elective Code: B; Comments: Permission of instructor, coordinator

HSC-107 Professionals in Health (2)
Presents skills and characteristics expected for professional preparation and employability. Provides an overview of the health industry as it relates to health and safety regulations. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

HSC-115 Medical Terminology (4)
A comprehensive study of medical terminology as the language of medicine. Analyzes words by dividing them into component parts. Relates the medical terms to the structure and functional pathology of diseases and current medical procedures. Emphasizes word usage, abbreviations, pronunciation and spelling. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B

HSC-117 Basic Medical Terminology (2.5)
Introduces basic word structure and terminology pertaining to body systems. Includes spelling, pronunciation and word usage. Provides a basic overview of disease process, symptoms, anatomy, special procedures, pharmacology and abbreviations. Credits: 2.5, Hours: (2.5/0/0/0), Arts & Sciences Elective Code: B

HSC-131 CPR for Healthcare Providers (0.5)
Learn basic life support for healthcare providers. Credits: 0.5, Hours: (0/1/0/0), Arts & Sciences Elective Code: B

HSC-135 First Aid (0.5)
Learn basic first aid concepts along with the types of emergencies and conditions. Credits: 0.5, Hours: (0.5/0/0/0), Arts & Sciences Elective Code: B

HSC-142 Elements of Pharmacology (1)
Introduces essential concepts of pharmacology including drug legislation, terminology and pharmacy therapy in the clinical management of patient care. Provides an overview of the different drug classifications and their actions and use. Credits: 1, Hours: (1/0/0/0), Prereq: None; Coreq: HSC-115; Arts & Sciences Elective Code: B

HSC-157 Professional Roles in Health Care (3)
Introduces future health care professionals to knowledge and skills in safe practices, nursing roles and processes, health promotion, and legal and ethical implications. Intended for beginning students who will enroll in the nursing program. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HSC-160 Healthcare Communication and Comprehension (3)
Simulates clinical and workplace situations for non-native English speakers in health programs. Teaches basic health vocabulary and procedures, and introduces the culture of the health workplace. Improves non-native speakers' comprehension and comprehensibility during clinical experiences. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

HSC-169 Communication in the Health Care Environment (3)
Presents foundational communication techniques necessary to work and succeed in health care. Studies nurse-client relationships, including cultural considerations, interdisciplinary communication, and crisis and conflict resolution. Explains principles of teaching and learning, and how they tie to health literacy for clients, information literacy for health care professionals, medical terminology and documentation. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

HSC-172 Nurse Aide (3)
The 75-hour Nurse Aide course is designed to meet the training requirements for the nurse aide in long-term care facilities. Emphasis is in achieving a basic level of knowledge and demonstrating skills to provide safe, effective resident care.

HSC-205 Exploration of Healthcare Careers (3)
Explores all aspects of health care and careers in the field. Focuses on understanding basic wellness, and growth and development of the human being. Includes field trips to an emergency room at a local hospital, a surgical center, a free healthcare clinic, a dental clinic, an outpatient OT/PT/speech center, administrative offices at a nursing home and a laboratory. Covers the past, present and future of health care. Credits: 3, Hours: (2.75/0/0/1), Arts & Sciences Elective Code: B

HSC-210 Health Skills I (1)
Introduces basic patient care skills: infection control techniques, measuring and recording vital signs, and body mechanics. Laboratory practice and skill achievement is required. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

HSC-211 Health Skills II (1)
Introduces basic skills related to patient mobility, methods for ambulation, positioning and range of motion. Discusses causes and effects of immobility. Laboratory practice and skill achievement is required. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

HSC-217 Introduction to Pathology (3)
Introduces the study of pathology. Includes description, etiology, signs and symptoms, diagnostic procedures, current medical treatment, progress and prevention of disease in each body system, with emphasis on basic concepts and terminology. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-161 or BIO-173; Arts & Sciences Elective Code: B

HSC-281 Limited Practice Radiography (5)
Emphasis is placed on providing the knowledge and skills necessary to provide maximum protection from ionizing radiation for the patient and personnel. Includes basic physics as applied to X-ray machines and technology; film processing; patient position; preparation for radiographs of the chest, extremities and spine; film evaluation; and radiation protection. The course meets the rules and regulations of the state of Iowa for radiation-emitting equipment. Credits: 5, Hours: (4/2/0/0), Arts & Sciences Elective Code: B

HSC-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HSC-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

HSV: Human Services

HSV-100 Mandatory Reporting Preparation (1)
Educates students in the identification, reporting and follow-up to child abuse, dependent adult abuse and elder abuse allegations. Develops skills in reporting and documenting allegations for abuse. Students must successfully complete computer-based testing. Required by State of Iowa for working in agencies with dependent persons. Course is designed specifically for students in Human Services, Allied Health and Early Childhood, but is open to any interested student. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

HSV-101 Human Services Career Orientation (3)
Introduces the value base of human services and evaluates problems that can be encountered in working with people when these values conflict with client needs. Introduces the framework of the human services approach, specifically formation of individual values, systems analysis, problem solving and conflict resolution. Concepts of systems analysis are accompanied by applications of these concepts to problems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HSV-110 Human Service Policy and Programs (3)
Investigates the relationship between social service programs and related social issues in the context of cultural conditions. Introduces historical trends in human services and acquaints students with current human services available to various client groups. Credits: 3, Hours: (3/0/0/0), Prereq: HSV-101; Arts & Sciences Elective Code: A

HSV-120 Observation Skills (3)
Focuses on learning the distinction between inference and behavior, and recording behaviors in a systematic way. Course also includes learning the importance of environment as an influence on human behavior. Closely related competencies to be addressed are writing behavioral objectives and contracts. Credits: 3, Hours:

(3/0/0/0), Prereq: HSV-101; Arts & Sciences Elective Code: A

HSV-131 Basic Problem Solving Skills (3)
Includes an overview of various intervention techniques. Students learn principles of communication, interviewing and conflict resolution and then practice the techniques in role played videotape situations. Credits: 3, Hours: (3/0/0/0), Prereq: HSV-101; Arts & Sciences Elective Code: A

HSV-200 Adaptation Strategies (3)
Examines the values, skills and issues of working with people with disabilities in vocational, residential, social/recreational and other community settings. Focuses on exploring, researching and understanding the relationships between consumers, families, support staff, community-based agencies and other community systems. Encourages students to develop the skills to utilize adaptation strategies necessary to promote independence, participation and success among all age groups. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HSV-282 Health and Psychosocial Rehabilitation (3)
Focuses on an overview of health, substance abuse and mental health issues of individuals. Students develop skills in identification, planning, assessment, treatment/interventions, and the development of social support systems and community resources. Students apply their knowledge of integrated practice in a discipline-specific project. Credits: 3, Hours: (3/0/0/0), Prereq: HSV-101; Arts & Sciences Elective Code: A

HSV-287 Counseling Theories and Techniques (3)
Provides further reinforcement and expands topics introduced in Basic Problem Solving. Includes goals of psychosocial rehabilitation, mental health disorders and their diagnosis, and categories and classification of Axis I Psychiatric Disorders. Describes the process of making appropriate client referrals, locating community human service resources and agencies, and creating and implementing service plans for health care issues. Credits: 3, Hours: (3/0/0/0), Prereq: HSV-101, HSV-131, HSV-282; Arts & Sciences Elective Code: A

HSV-290 Psychosocial Rehabilitation Field Experience and Seminar (3)
Students will work in an agency with people with mental illness and apply the skills and techniques learned in the psychosocial rehabilitation course. Students will meet in seminar class to discuss experiences and gain insights from the instructor and other students. Credits: 3, Hours: (0/6/3/0), Prereq: HSV-280; Arts & Sciences Elective Code: A

HSV-292 Substance Abuse and Treatment (3)
Examines alcohol and drug issues and the implications of having an addiction. Includes theories of the addictive process, prevention and treatment options, and specific counseling and therapeutic skills used with individuals in inpatient and outpatient settings. Focuses on the impact of the family unit, social systems and the greater community. Students apply their knowledge of integrated practice in a discipline-specific project. Credits: 3, Hours: (3/0/0/0), Prereq: HSV-101, HSV-282; Arts & Sciences Elective Code: A

HSV-800 Human Services Field Experience and Seminar (6)
Places the student in a Human Services agency for 220 hours. The experience is discussed as a seminar, the purpose of which is to maximize the experience by gaining insights from the other students and the instructor. These insights should enable the students to objectify their experience. Credits: 6, Hours: (1/6/6/0), Arts & Sciences Elective Code: A; Comments: Completion of Human Service classes.

HSV-813 Alcohol and Drug Counselor Field Experience and Seminar I (6)
Places the student in a Substance Abuse Treatment facility for a total of 250 hours. A weekly seminar maximizes student experience through insight from the other students and the instructor. These insights enable the students to objectify their experiences. Credits: 6, Hours: (1/0/15/0), Coreq: HSV-292; Arts & Sciences Elective Code: A; Comments: Meets part of the practicum requirement for the Iowa Board of Certification

HSV-814 Alcohol and Drug Counselor Field Experience & Seminar II (6)
Places the student in a Substance Abuse Treatment facility for a total of 250 hours. Follows and builds on Alcohol & Drug Counselor Field Experience and Seminar I. A weekly seminar maximizes student experience through insight from the other students and the instructor. These insights enable the students to objectify their experiences. Credits: 6, Hours: (1/0/15/0), Arts & Sciences Elective Code: A; Comments: Meets part of the practicum requirement for the Iowa Board of Certification

HSV-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HSV-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

HUM: Humanities

HUM-105 Working in America (3)
Introduces students to the humanities through an interdisciplinary study of work. By examining works of art, literature, music, philosophy, religion, history and anthropology, this course explores human labor in the past, present and future in an attempt to understand how work shapes human nature and culture. Focus will be on the meanings and values of students' work experiences. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-116 Encounters in Humanities (3)
By asking a series of questions about various examples of human activity (literature, philosophy, history, visual arts and music), teaches a method of inquiry for use in understanding and appreciating the humanities. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-123 U.S. Film History (3)
Tracks the development of film art in the United States from its earliest silent years to the modern era. Identifies and explores the contributions of American filmmakers and the influences of the American film industry and American culture on cinema as an art form. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-124 World Film History (3)
Tracks the development of film art in countries other than the United States from the primitive era to the modern era. Identifies and explores the contributions of major world filmmakers and the influences of the various film industries and cultures as reflected in the films of these specific countries. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-142 Popular Culture (3)
Introduces students to the study of popular culture. Analyzes the way in which human beings interact with popular culture, both as individuals and as part of the larger society. The course also examines a wide variety of popular texts to illustrate the ways in which they reflect and perhaps shape cultural values. Through this process, students develop skills for the critical analysis of advertising, television programs, comic books, and interactive multimedia, among other forms of popular culture. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-190 Culture and Technology (3)
Introduces students to the relationships between technology and culture through an interdisciplinary study of the humanities. The course examines these relationships through works in the humanities, for example art, literature, music, philosophy, religion, history, film and anthropology. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-200 International Study in Humanities (3)
Provides students with the opportunity to pursue studies in such areas as history, art, politics, music, literature, and foreign language. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

HUM-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

HUM-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

IND: Industrial Technology

IND-112 CPR/First Aid (1)
Students learn basic first aid and CPR. This course meets OSHA requirements for blood-borne pathogens and first aid for industry. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

IND-114 General Industry Safety (1)
Provides instruction on general industry safety and health topics. Learning activities result in students earning an OSHA 10 card. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

IND-119 Industry Orientation (1)
Presents information relating to careers and jobs that may result from the completion of the HVAC installer program. Topics include job specific information provided by employers and visits to actual work settings. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

IND-155 Microcomputer Applications (2)
Covers several applications for microcomputers in business and industry. Included are operating systems, data management, communications, word processing and peripheral devices. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

IND-350 Energy Health and Safety Certificate (3)
Builds upon IND-402 Manufacturing Health & Safety Certificate. Provides additional training and professional certifications in wind turbine, steam production, photovoltaic installation and high voltage power distribution workplace health and safety. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

IND-400 IMT Health and Safety Certificate (3)
Provides basic training and professional certifications in industrial maintenance workplace health and safety. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

IND-402 Manufacturing Health and Safety Certificate (2)
provides basic training and professional certifications in manufacturing workplace health and safety. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

INT: Interior Design

INT-107 Kitchen and Lighting Design (4)
Provides kitchen design standards and skills according to NKBA industry standards. Covers structural lighting, and project cost estimation and specifications. Kitchen design topics include work center requirements, cabinetry, countertops, storage, plumbing, appliances, and the graphic communication and presentation skills required in a kitchen dealership. A kitchen portfolio, including materials board, Excel Workbook and CAD drawings, is produced and presented. Credits: 4, Hours: (4/0/0/0), Prereq: INT-310; Coreq: INT-108, INT-110; Arts & Sciences Elective Code: B

INT-108 CAD for Interior Designers I (3)
Provides interior design students with CAD skills to produce two-dimensional floor plans and elevation drawings. Acquaints students with the current version of AutoCAD as a tool to produce drawings and set up client files. Credits: 3, Hours: (1/4/0/0), Prereq: CSC-110; Coreq: INT-107, INT-110; Arts & Sciences Elective Code: B

INT-110 Interior Design I (4)
Focuses on furniture space planning, upholstery, windows, window treatments, and floors. Emphasizes the study of materials and how to accurately measure, use of Excel Workbook and installation. A product resource file is compiled, along with lab assignments, which builds skills working with materials as they are applied to interiors and working with a client. Credits: 4, Hours: (4/0/0/0), Prereq: INT-310; Coreq: INT-107, INT-108; Arts & Sciences Elective Code: B

INT-111 Interior Design II (4)
Allows the student, through project work, to apply three new units to residential interior design: wall materials, interior architectural detail (millwork) and bath design (NKBA guidelines). The interior products are specified and color schemed. A project portfolio is completed, including materials board, CAD drawings, color renderings, and Excel Workbook. A major residential project is managed from programming, room space planning, and working drawings to furniture plans. The final is an oral presentation of the project. Credits: 4, Hours: (4/0/0/0), Prereq: INT-110; Coreq: INT-118, INT-313; Arts & Sciences Elective Code: B

INT-113 Portfolio Assessment (1)
Provides an opportunity for students to assemble portfolios and set career goals in the transition from school to work. Professional interior designers and guest speakers discuss their career specialties with students. Speakers discuss what they look for in a job candidate and interviewing techniques. Resumes are prepared for specific design specialties. Students present their portfolios as the final exam. Credits: 1, Hours: (1/0/0/0), Coreq: INT-108, INT-111, INT-313; Arts & Sciences Elective Code: B

INT-118 CAD for Interior Designers II (3)
Students create and render three-dimensional objects; project viewpoints; work in model, and paper, space using CAD symbol library resources. Students attach attributes to blocks, extract data from design documents and databases. Production of portfolio-quality work is required. Credits: 3, Hours: (2/2/0/0), Prereq: INT-108; Coreq: INT-111, INT-313; Arts & Sciences Elective Code: B

INT-300 Textiles for Interior Design (3)
Studies fibers, yarns, fabrics, finishes and regulations used in commercial and residential interior textile products. Fabric properties are evaluated according to variables of end-use serviceability and product categories. Directed laboratory activities provided. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

INT-301 Design Fundamentals (3)
Surveys American architecture and furniture styles and studies design elements and principles applied to interiors. Includes an introduction to the design process, space planning and accessibility issues. Interior design as a career is explored. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

INT-302 Color Theory (3)
Serves as a skill course emphasizing the use of hue, value and chroma based on the color systems of Munsell and Brewster/Prange. Hue resource files are swatched serving as a basis for color schemes applicable to interior design. Emphasizes development of dominant hue, secondary hue, accent hue and areas of neutral. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

INT-303 Historical Interiors I (3)
Surveys the progression of European and American architecture, decorative arts and furniture styles of the 18th century through the 20th century. Identification of modern design in architecture and furniture is stressed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

INT-304 Historical Interiors II (3)
Surveys the progression of architecture, decorative arts and furniture styles from classical antiquity through the rococo period of Europe. Projects and study stress the identification and coordination of these periods. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

INT-305 SketchUp for Interior Design (1)
Provides guided, step-by-step instruction on using computer software to develop artistic graphics and computer models necessary for representing interiors. Explores artistic expression. Credits: 1, Hours: (0/2/0/0), Prereq: CSC-110; Arts & Sciences Elective Code: B

INT-306 Photoshop for Interior Design (1)
Introduces photo manipulation using Adobe Photoshop CS4 for interior design applications. Credits: 1, Hours: (0/2/0/0), Prereq: CSC-110; Arts & Sciences Elective Code: B

INT-307 Accounting Concepts for Business Planning (1)
Introduces basic accounting concepts and procedures, including financial statement preparation. Focuses on incorporating financial projections into the design of pricing strategies and business planning. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

INT-310 Architectural Graphics (4)
Introduces architectural tools, symbols and scale drawings. Basic skills mastered include architectural lettering, dimensioning, plan drawing types, schedules and overlay methods of blueprinting. Field-measuring skills are integrated into required lab activities. Material samples are swatched and color schemed according to project requirements in the lab. Presentation skills learned include swatchboard construction. Floor plan and elevation color rendering of material samples will be prepared to communicate a color scheme to a client. Attendance and time management skills are developed in this course that ensure projects are completed by the due date. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: B

INT-313 Contract Design (4)
Studies space planning of casegood and modular systems workstations. Includes units in accessibility for ADA code compliance in public facilities

and fire code. Students work in small groups, and project management skills are developed. Projects include CAD drawings, Excel, Workbooks and material boards. Credits: 4, Hours: (4/0/0/0), Prereq: INT-107; Coreq: INT-111, INT-118; Arts & Sciences Elective Code: B

INT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

INT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

INT-932 Internship (0.5-4)
Provides an opportunity to receive interior design work experience through on-the-job training in an approved work setting. This internship will be approved by the Interior Design coordinator and will be evaluated with a letter grade. Credits: 0.5-4, Hours: (0/0/0/2-16), Arts & Sciences Elective Code: A

ITP: Interpreting

ITP-101 Independent Skills Lab I (2)
Provides additional practice in fundamental skills in conjunction with American Sign Language I. Students engage in various activities including the use of professional videotapes. Required for majors and recommended for non-majors. Credits: 2, Hours: (0/4/0/0), Arts & Sciences Elective Code: A

ITP-102 Independent Skills Lab II (2)
Provides continued practice in developing skills in conjunction with American Sign Language II. Students engage in various activities including the use of professional videotapes. Required for majors and recommended for non-majors. Credits: 2, Hours: (0/4/0/0), Prereq: ASL-141; Arts & Sciences Elective Code: A

ITP-120 Introduction to Interpreting (3)
Provides a history of interpreting as well as an overview of interpreting as a profession. Topics include the interpreting environment, professional ethics and certification, interpreting in educational and community settings, and the physical, psychological and health aspects of interpreting. The influence of the cultural context on the success of the interpreting process is explored. Students are introduced to pantomime and its use in language expression in a visual mode. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ITP-130 Social Aspects of Deaf Culture (3)
Provides a history of interpreting, as well as an overview of interpreting as a profession. Includes the interpreting environment, professional ethics and certification, interpreting in educational and community settings. Explores the physical, psychological and health aspects of interpreting, as well as the influence of the cultural context on the success of the interpreting process and models. Introduces pantomime and its use in language expression in a visual mode. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ITP-150 Process Analysis (4)
Emphasizes pre-interpreting skills and the receptive process of interpreting sign to voice. Students learn to process visual and auditory information. Students learn to observe and to reflect meaning by vocalizing in the interpreter role. Students study classifiers in depth. Strong emphasis is on the use of correct standard English. Students build vocabulary in the English language and there is less emphasis on signing. Credits: 4, Hours: (4/0/0/0), Prereq: ASL-141; Arts & Sciences Elective Code: A

ITP-161 Signing Systems in the Educational Setting (3)
Provides an opportunity to learn Signing Exact English II and Signed English with a focus on transliterating in educational settings. Students learn the rules of usage and they build speed in words/signs per minute. Students explore the history and relationships of different sign modes. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ITP-170 Sign Choir (1)
Provides an aesthetic environment for students to explore American Sign Language as a performing arts medium. Students learn to sign songs in a variety of musical styles. Some choreography may be incorporated, but the effect will be visually pleasing for hearing and deaf audiences. The final will be in the form of a performance for a live audience. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

ITP-220 Interpreting I (3)
Emphasizes three aspects of interpreting: American Sign Language, transliterating and voicing. Focuses on analyzing texts in increasing complexity and rates of speed, interpreting them in American Sign Language and transliterating into Conceptually Accurate Signed English. Stresses sign-to-voice and voice-to-sign, with most assignments produced in a manual mode. Uses online resources for assignments. Credits: 3, Hours: (3/0/0/0), Prereq: ASL-241; Arts & Sciences Elective Code: A

ITP-221 Interpreting I (4)
Emphasizes three aspects of interpreting: American Sign Language, transliterating and voicing. Students learn to analyze texts in increasing complexity and rates of speed, interpret them in American Sign Language and transliterate into Conceptually Accurate Signed English. Focus of the class is on sign-to-voice and voice-to-sign. Most assignments will be produced in a manual mode. Journaling is used to help students in the learning process. Credits: 4, Hours: (4/0/0/0), Prereq: ASL-241; Arts & Sciences Elective Code: A

ITP-222 Interpreting II (3)
Focuses on continued skill development in transliterating and voicing learned in Interpreting I. Focuses on achieving a higher level in cognitive processing, transliterating and voicing. Introduces oral interpreting, theater interpreting and an experience in Deaf Theater to broaden the student's experience. Credits: 3, Hours: (3/0/0/0), Prereq: ASL-271, ITP-221; Arts & Sciences Elective Code: A

ITP-255 Professional Settings (3)
Explores various settings in interpreting. Ethical decision making skills and interpersonal relationships as they apply to the professional interpreting field are examined and analyzed. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

ITP-261 Practicum (4)
Applies the concepts and skills learned in community and/or educational interpreting situations under the guidance of a mentor interpreter. This on-the-job experience occurs as the final phase of the program. Focuses on the roles and responsibilities of the interpreter, current professional topics and application of the Code of Ethics. Students keep logs, journals and develop ePortfolios. Credits: 4, Hours: (0/0/12/0), Arts & Sciences Elective Code: A

ITP-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

ITP-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

ITP-954 Practicum and Seminar (6)
Application of concepts and skills learned in the classroom in community or educational interpreting situations under the guidance of a mentor interpreter. This on-the-job experience occurs as the final phase of the program. In the seminar portion of the course, students discuss roles and responsibilities of the interpreter, current professional topics, and application of the Code of Ethics. Students will keep logs, journals, and develop a portfolio. Credits: 6, Hours: (2/0/12/0), Prereq: ITP-221; Arts & Sciences Elective Code: A; Comments: ITP-221 must be completed with a grade of C or better.

LIT: Literature

LIT-105 Children's Literature (3)
Provides a broad overview of children's literature, with emphasis upon work done by American writers and illustrators. Students use standard techniques of literary analysis to critique the works explored in the course. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-158 Literature of the African Peoples (3)
Provides an introduction to the literature and culture of persons of African descent. Readings include fiction and nonfiction authors from Africa, the Caribbean and the United States. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-203 Forms of Literature: Story Cycle (3)
Explores, through story cycles and critical theory, the questions: What is a story cycle? How are they crafted, read and interpreted? How are they different from or similar to other forms of literary

expression? How does form affect interpretation? Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-204 Forms of Literature: Nonfiction (3)
Focuses on literary nonfiction - essays, memoirs, profiles or criticism - that aspires not only to inform, but also to employ language aesthetically and prompt reflection on experience. Students will explore, through literature and critical theory, the following questions: What is literary nonfiction? How are works of literary nonfiction crafted, read and interpreted? How are they different from and similar to other forms of literary expression? How does form affect interpretation? Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-205 Forms of Literature: Drama (3)
Focuses on the study of dramatic literature. Students will practice a method of reading and interpreting plays, exploring the following questions: What is drama? How are works of drama crafted, read and interpreted? How are they different from and similar to other forms of literary expression? How does form affect interpretation? Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-206 Forms of Literature: Fiction (3)
Explores, through short stories, novels, films and critical theory, the following questions: What is fiction? What are its common elements? How does understanding these elements and the ways they interconnect affect our understanding of how fiction is crafted, read and interpreted? How is fiction different from or similar to other forms of literary expression? Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-207 Forms of Literature: Poetry (3)
Focuses on the study of poetry. Students will practice reading and interpreting poems, exploring the following questions: What is poetry? How are poems crafted, read and interpreted? How are they different from and similar to other forms of literary expression? How does form affect interpretation? Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-208 Forms of Literature: New Media (3)
Explores online and computer-based literature. Employing relevant literary theory, students study traditional literature (poetry, fiction, nonfiction, drama) and compare those forms to new media literary forms like hyperfiction and hyperpoetry. Questions include the following: What is new media literature? How does it compare with traditional genres? What makes it qualify as literature? How does literary form affect interpretation? Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-209 Forms of Literature: Film Adaptation (3)
Focuses on the relationship between literary works (fiction, drama, nonfiction, poetry or graphic literature) and their adaptations to film. Students explore the adaptation of literature to film; how the elements of plot, character, setting, point of view, symbol and theme are adapted or altered from literature to film; and how film adaptations influence our understanding of both literature and film. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-222 Literature and Culture: American Dreams (3)
Explores a variety of expressions of self and society in America through established fiction, autobiography, journals, letters, photographs and other cultural artifacts. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-224 Literature and Culture: Women and Work (3)
Through reading literature along with social documents by women and men, the course explores gender identity and work issues for women in traditional and nontraditional gender roles - as domestic angels, factory workers or professionals. Materials may include autobiographies, letters, films, short fiction, poetry, drama, novels and other artifacts. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-225 Literary Themes: Beyond Bartleby: Images of Business and Labor in Literature and Film (3)
Explores images and issues of business and labor as they manifest in major fiction and nonfiction texts. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A; Comments: Admission to the Advance program

LIT-226 Literary Themes: Literature and the Search for Identity (3)
Explores the theme of identity in literature - short stories, novels, poems, plays and nonfiction. May use ideas and approaches from literary criticism, psychology, philosophy and religion to illuminate the importance of stories in structuring human experience and establishing a sense of our own identities. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-227 Literature and Culture: World Poetry (3)
Explores non-Western traditional and contemporary poetry of Asia, Africa, the Middle East, Latin America and the Caribbean. Studies the forces that shape the creation as well as the experience of poetry in these cultures, such as politics, gender, religion, technology, etc. Students learn to compare literary expression across cultures and to place the Western tradition in a larger context. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

LIT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires that students meet honors eligibility criteria. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

LIT-928 Independent Study (1-3)
Provides readings, papers and/or research projects in literature under the guidance of a staff member. Credits: 1-3, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

LIT-945 Selected Topics (1-3)
Offers specialized study in interest areas. Areas may include special courses in mythology, American culture, adolescent literature or other concentrations. Credits: 1-3, Hours: (1-3/0/0/0), Prereq: ENG-105 or ENG-120; Arts & Sciences Elective Code: A

MAP: Medical Assistant

MAP-123 Administrative Medical Office Procedures (3)
Presents the principles of administration for the medical office including facility and supply management, telephone and appointment techniques, managing records, and medical bookkeeping. Credits: 3, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

MAP-142 Medical Insurance and Legalities (3)
Provides a working knowledge of basic medical insurance programs, forms utilized and the record keeping of insurance claims. Also includes medical ethics and legalities related to medicine. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-161, HSC-115; Arts & Sciences Elective Code: B

MAP-210 Medical Lab (3.5)
Provides basic principles and skills in hematology, urinalysis, venipuncture, blood chemical exams, and quality control as applied to the medical office. Credits: 3.5, Hours: (1.5/4/0/0), Prereq: BIO-161, HSC-107, HSC-115, HSC-210, MAP-123; Arts & Sciences Elective Code: B

MAP-260 Basic Electrocardiology (1)
Provides instruction in electrocardiography including psychological and physical preparation of a patient for an ECG: paper set-up and operation of equipment, mounting of tracings and troubleshooting to obtain acceptable tracings. This course does not include complex interpretation and diagnosis of cardiac rhythms. Credits: 1, Hours: (0.5/1/0/0), Prereq: BIO-161, HSC-107, HSC-115, HSC-210, MAP-123; Arts & Sciences Elective Code: B

MAP-312 Medical Assistant Clinical Procedures (3)
Includes basic clinical skills used in a medical office: preparing for the patient's visit; assisting the physician and patient during examination and treatment, including minor surgery; positioning, microbiology and sterilization; X-rays; physical therapy; nutrition; and administration of injected medications as applied to the medical office. Credits: 3, Hours: (1.5/3/0/0), Prereq: BIO-161, HSC-107, HSC-115, HSC-210, MAP-123; Arts & Sciences Elective Code: B

MAP-501 Math for Medications (1)
Provides a basic mathematical background for an understanding of measurement systems and the calculation of dosages of oral and parenteral medications for medical assisting. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MAP-513 Medical Assisting Pharmacology (3)
Provides a basic background in the classification of drugs, their sources, uses and legal implications. Discusses characteristics of typical drugs, side effects, precautions, interactions and patient education. Credits: 3, Hours: (3/0/0/0), Prereq:

BIO-161, HSC-115; Arts & Sciences Elective Code: B

MAP-618 Medical Assisting Externship (7)
Offers supervised practical experience in medical offices, clinics and other medical care settings. Credits: 7, Hours: (2/0/15/0), Prereq: MAP-123, MAP-210, MAP-312, MAP-513, MAP-142, MAP-260, MAP-501; Arts & Sciences Elective Code: B; Comments: All Medical Assisting technical courses.

MAP-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MAS: Masonry

MAS-118 Masonry Safety (1)
Provides instruction on masonry construction safety and health topics for entry-level workers. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

MAS-215 Masonry Tools and Equipment I (2)
Provides knowledge and use skills of basic manual masonry tools and equipment covering selection, use, maintenance and repair. Includes measuring devices, builders' levels and transits, trowels and other mortar tools, basic masonry cutting and shaping tools, levels, squares, mortar mixing, and material handling equipment. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

MAS-217 Masonry Lab I (8)
Provides introductory, intensive hands-on skills in construction of masonry structures including handling and identification of materials. Develops skills in handling and laying masonry units, mixing mortar, finishing joints. Includes introduction and practice in basic masonry walls and the activities required to construct them. Credits: 8, Hours: (4/8/0/0), Arts & Sciences Elective Code: B

MAS-218 Masonry Tools and Equipment II (2)
Extends knowledge and use skills of masonry tools and equipment covering selection, use, maintenance and repair. Includes power tools and equipment such as masonry drilling tools and equipment, masonry fastening devices, power fasteners, masonry and concrete cutting devices and equipment, scaffolding and ladders. Credits: 2, Hours: (2/0/0/0), Prereq: MAS-215; Arts & Sciences Elective Code: B

MAS-222 Masonry Lab II (9)
Provides advanced, intensive hands-on skills in construction of masonry structures. Improves skills in handling and laying masonry units, mixing mortar, and finishing joints. Includes introduction and practice in complex masonry walls, flashings, reinforcement, finishing and cleaning. Credits: 9, Hours: (4/10/0/0), Prereq: MAS-217; Arts & Sciences Elective Code: B

MAS-800 Internship (2)
Provides employment work in an approved, masonry-related environment. Includes employer/supervisor evaluations and instructor visits/interviews. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

MAS-920 Field Experience (3)
Provides capstone masonry construction experience. Includes final evaluation covering masonry skills, work habits, skills in working with others and ability to contribute to the success of the project. Credits: 3, Hours: (0/0/0/12), Prereq: MAS-218, MAS-222; Arts & Sciences Elective Code: B

MAS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MAS-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

MAT: Mathematics

MAT-018 College Readiness Experience Math (4)
Provides basic math instruction to determine student readiness for college-level math courses. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: D

MAT-052 Pre-Algebra (3)
Introduces basic algebra concepts and reviews basic math. Includes fractions, decimals, proportions and percents. Introduces integers, exponents, simple equations and graphing. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

MAT-062 Elementary Algebra (3)
Includes the properties of the real numbers, equations and inequalities in one variable, formulas, applications, operations and factoring of polynomials, exponents, and graphing linear equations. This course presumes a proficiency in fractions, decimals and signed numbers. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

MAT-076 Preparation for College Mathematics (3)
Covers essential topics from Elementary Algebra and Intermediate Algebra. Emphasizes active learning supported by instructor guidance and small-group lectures. Course format is computer-based, individually paced and modular. Modules 1-5 or four subsequent modules must be completed to receive credit. Course can be taken for credit up to 3 times in order to complete remaining modules. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

MAT-095 Personal Achievement Math (1-2)
Individualized course of instruction in basic math. Topics include: whole numbers, fractions, decimals, ratio and proportion, and percent. Additional topics may include pre-algebra, metric system and technical math. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: D

MAT-102 Intermediate Algebra (4)
A continuation of topics studied in Elementary Algebra. Includes equations, inequalities, systems of equations, matrices, functions, graphs, polynomials, rational expressions, exponents, radicals and logarithms. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-062, or MAT-076 through Module 8; Arts & Sciences Elective Code: B

MAT-107 Survey of Mathematics (4)
Provides an overview of topics that include: sets, real number systems, ratios, proportions, percentages, geometry, algebra and functions. The course is for students with a minimum of one year of high school algebra and who intend to take Statistical Ideas or Mathematics and Society. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B; Comments: One year high school algebra or placement test.

MAT-109 Industrial Maintenance Math Fundamentals (3)
Demonstrates mathematical principles to enable students to understand and apply course material covered throughout the Industrial Maintenance Technology program. Improves math fundamentals that are used throughout the rest of the program. Includes metric prefixes and conversions, exponents, scientific notation, percentages, dimensional analysis, ratio and proportions, areas, volumes, and algebraic expressions. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-062; Arts & Sciences Elective Code: B

MAT-115 Mathematics and Society (3)
Introduces selected areas of mathematics in familiar settings and develops students' conceptual and problem-solving skills. The course includes a study of mathematical concepts selected from statistics, probability, game theory, growth patterns and coding information. Other topics may be included. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102 or MAT-107 or MAT-076 through Module 8; Arts & Sciences Elective Code: A

MAT-117 Mathematics for Elementary Teachers (3)
Designed to deepen students' understanding of the mathematics they will teach to elementary school children. Includes methods of problem solving, measurement, geometry, place value, arithmetic operations in a variety of algorithms and the relationships between these algorithms. Students also explore concepts using manipulatives. This course was developed for elementary education majors who choose a specialization different from mathematics, but is not limited to those students. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102, or MAT-076 through Module 8; Arts & Sciences Elective Code: A

MAT-120 College Algebra (3)
Uses a problem-solving approach to illustrate how algebra can model and solve real-world problems. Emphasizes linear, exponential and logarithmic functions. This liberal arts course is not preparation for calculus. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102, or MAT-076 through Module 10; Arts & Sciences Elective Code: A

MAT-136 Trigonometry and Analytic Geometry (5)
Examines trigonometric functions, graphs, identities and applications. Includes conic sections, polar coordinates, parametric equations, vectors, planes and surfaces. Credits: 5, Hours: (5/0/0/0), Prereq: MAT-138; Arts & Sciences Elective Code: A

MAT-137 Applications of Geometry (1)
Begins with a review of right angle trigonometry as it applies to the machinist and continues with additional trig (both right angle and oblique angle) and geometry concepts. Emphasizes practical application of the mathematical concepts to the planning and programming skills required for CNC programs. Credits: 1, Hours: (1/0/0/0), Prereq: MAT-736; Arts & Sciences Elective Code: B; Comments: Equivalent industrial math experience may be taken in lieu of prerequisite.

MAT-138 College Algebra with Limits (4)
Examines polynomial, rational, radical, exponential and logarithmic functions and equation solutions. Includes matrices, sequences, series and introduces limits. This course is intended for all students who will eventually take any calculus course. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-102, or MAT-076 through Module 12; Arts & Sciences Elective Code: A

MAT-140 Finite Math (3)
Includes methods of solving linear equations and inequalities. Introduces linear programming, matrices, functions, graphs, counting techniques, probability, mathematics of finance and applications. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102, or MAT-076 through Module 10; Arts & Sciences Elective Code: A

MAT-149 Linear Algebra (3)
Includes matrix and vector arithmetic, using matrices to solve systems of linear equations, eigenvalues and eigenvectors, diagonalization of matrices, and an introduction to subspaces of Euclidean space. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-210; Arts & Sciences Elective Code: A

MAT-150 Discrete Math (3)
Introduces concepts in discrete mathematics as applied to computer science. Includes logic, methods of proof, sets, functions, relations, counting techniques, discrete probability, permutations and combinations, graphs and trees. Emphasizes connections between discrete math and programming concepts. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102, or MAT-076 through Module 10; Arts & Sciences Elective Code: A

MAT-155 Statistical Ideas (3)
Designed for students who are not majoring in mathematics or the sciences. The course provides an overview of the basic ideas needed by consumers of statistics and can also provide a helpful framework for a more detailed study of the subject. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102 or MAT-107, or MAT-076 through Module 8; Arts & Sciences Elective Code: A

MAT-157 Statistics (4)
Focuses on descriptive statistics (mean, medium, mode, standard deviation and variance) and introduces correlation and linear regression. Emphasizes inferential statistics and probability distributions as applied to confidence intervals, hypothesis testing of mean and standard deviation, and applications to business and other fields. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-102 or MAT-107 or MAT-155 or MAT-076 through Module 8; Arts & Sciences Elective Code: A

MAT-162 Business Statistics (4)
Introduces statistics, primarily for business majors. Investigates methods of collection, organization, presentation, analysis and interpretation of quantitative data as tools in effective business decision-making. Computer applications are used to assist in visualizing and analyzing data. Covers descriptive statistics, probability, confidence intervals and hypothesis testing for one and two samples, regression, correlation and chi-square. Additional topics may be covered, including ANOVA. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-138 or MAT-140 or MAT-155 or MAT-157; Arts & Sciences Elective Code: A

MAT-165 Business Calculus (3)
Studies the techniques of differential and integral calculus likely to be encountered in an undergraduate course in business economics. Applications are emphasized in these areas. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-138; Arts & Sciences Elective Code: A

MAT-175 Calculus for the Biological Sciences (4)
Provides non-theoretical analysis of differential and integral calculus. Introduces differential equations, while emphasizing life science applications. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-138; Arts & Sciences Elective Code: A

MAT-210 Calculus I (4)
Includes limits, derivative, differentiation, the differential elementary applications of calculus and introduction to integration. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-136; Arts & Sciences Elective Code: A

MAT-216 Calculus II (4)
Continues Calculus I and includes study of the integral, integration, application of integration, techniques of integration and infinite series. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-210; Arts & Sciences Elective Code: A

MAT-219 Calculus III (4)
Continues Calculus II and includes study of vector functions, function of several variables, multiple integrals and vector fields. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-216; Arts & Sciences Elective Code: A

MAT-227 Differential Equations With Laplace (4)
Studies exact equations, separable equations, linear equations, physical applications, series solutions, systems of linear differential equations and methods of approximating the solutions to first-order equations. Laplace transforms are introduced and used to solve differential equations. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-216; Arts & Sciences Elective Code: A

MAT-700 Basic Math (3)
Covers basic business skills such as computing with whole numbers, fractions, decimals, percents, and simple exponents and radicals. Includes evaluating formulas, such as interest formulas and geometric measurements, and solving percent problems. Familiarizes students with ratio and proportion as a problem solving tool, the metric system, dimensional analysis, basic algebra with signed numbers and solving first degree equations. Introduces basic statistics, reading tables and graphs, and calculating averages and weighted means. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MAT-715 Industrial Math I (3)
Covers basic math skills such as addition, subtraction, multiplication and division of whole numbers, decimals and fractions. Covers specifically dimensional analysis and significant digit concepts. Also gives practice and solving stated problems and covers introductory algebra concepts. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MAT-716 Industrial Math II (3)
Covers basic algebra as it relates to fundamental equations, ratios and proportion, and percentages. Covers applied geometry as it relates to finding length, area, volume, etc. Also covers basic right angle trigonometry and gives more practice in solving stated problems. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-700; Arts & Sciences Elective Code: B

MAT-718 Industrial Maintenance Math (3)
Builds on principles learned in the IMT math fundamentals course. Demonstrates practical mathematical principles to enable students to understand and apply course material covered throughout the Industrial Maintenance Technology program. Covers angles and Cartesian coordinates, j-operators, complex numbers, dimensional analysis, inductance, capacitance, RLC circuits, trigonometric functions, transistors, power supplies and diodes. Lab excercises enhance understanding of inductance, reactance and capacitance in the circuit. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

MAT-731 Introduction to Math (2)
Reviews basic arithmetic operations and problem solving, including whole numbers, fractions, decimals, ratio and proportion, and percent as they apply to health professions. Covers computations, evaluating formulas with signed numbers and radicals, and exponents, as well as practical applications of the Metric, Troy and Apothecaries' systems of measurement. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B; Comments: Placement test.

MAT-732 Introduction to Math (3)
For Respiratory Therapy and END students only. Reviews basic math concepts, including whole numbers, fractions, decimals, ratio and proportion, percents, the metric system, geometric shapes and graphs. Covers basic algebra topics, such as integers, expressions, scientific notation, equations, application problems, graphing straight lines and slopes, and variation. Overviews percent solutions, concentration problems, preparing solutions and dosage problems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B; Comments: Placement test.

MAT-735 Machinist Mathematics I (2)
Begins with a review of fractions and decimals as they are used to solve shop problems. Students

are introduced to the problems involving powers and roots, tapers and angles. Use of the calculator is introduced, along with handbook tables and formulas. Introduces the student to metric conversion and more advanced applied math involving calculations of area, volume and weight of material. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

MAT-736 Machinist Mathematics II (1)
Continues Machinist Mathematics I. Introduces students to more advanced practical mathematics. Includes metric conversion, area and volume calculation, temperature conversion and expansion of metals. Right angle trigonometry is introduced along with calculations that relate to numerical control programming. Credits: 1, Hours: (1/0/0/0), Prereq: MAT-735; Arts & Sciences Elective Code: B

MAT-738 Plumbing Math Concepts (1)
Provides instruction on plumbing trade calculations including British Thermal Units (BTUs), heat transfer, heat loss and heat gain, latent and sensible heat, volume, weight and surface area calculations, percentage calculations, water and head pressure calculations, Boyle's Law, and the applications of Boyle's Law. Credits: 1, Hours: (1/0/0/0), Prereq: MAT-716; Arts & Sciences Elective Code: B

MAT-739 Pipe Fitters Math (3)
Provides practical math skills intended for the pipe welder apprentice, journeyman or supervisor. Students complete a series of math exercises commonly used in pipefitting. Trigonometry review to complex rolling offsets are covered. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-102 or MAT-765; Arts & Sciences Elective Code: B

MAT-740 Introduction to Technical Mathematics (2)
Prepares the student for the study of technical mathematics. Concentrates on algebraic skills and other related math skills. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: D

MAT-745 Technical Mathematics I (4)
Covers applied geometry, functions and their graphs, trigonometry, systems of linear equations, operations with algebraic expressions, solving quadratic equations, and logarithms and exponentials. Stresses applied problems from the engineering field, as well as using scientific calculators as problem-solving tools. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B

MAT-746 Technical Mathematics II (4)
Includes logarithms and exponentials, solving nonlinear equations, variation, sequences, binomial theorem, trig identities, analytic geometry and statistics. Introduces the fundamental concepts of calculus, including limits, the derivative, definite and indefinite integrals and applications of each. Emphasizes solving problems relevant to the mechanical engineering field. Credits: 4, Hours: (4/0/0/0), Prereq: MAT-745; Arts & Sciences Elective Code: B

MAT-755 Fabrication Math I (2)
Covers basic math skills such as addition, subtraction, multiplication and division of whole numbers, decimals and fractions. Introduces linear measurement with emphasis on common measurement tools and techniques, scientific calculators, handbook tables, formulas, basic algebraic concepts, metric conversion, and applied problems of calculating area, volume, mass and weight. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

MAT-756 Fabrication Math II (2)
Continues Fabrication Math I. Introduces students to more advanced practical mathematics, including plane geometry and trigonometry, by resolving real industry problems. Credits: 2, Hours: (2/0/0/0), Prereq: MAT-755; Arts & Sciences Elective Code: B

MAT-764 Welding Mathematics I (2)
Covers basic mathematic skills needed for layout design, fabrication and blueprint reading. Addition, subtraction, multiplication, and division of fractions and decimals is covered with special emphasis on their application. Geometric principles and linear measurement units are included to assist in understanding and utilizing basic shop skills. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

MAT-765 Welding Mathematics II (3)
Covers basic algebra as it relates to fundamental equations, ratios and proportions, and percentages. Also covers basic right angle trigonometry and provides for additional practice in solving stated problems. Credits: 3, Hours: (3/0/0/0), Prereq: MAT-715, MAT-740, MAT-764; Arts & Sciences Elective Code: B

MAT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

MAT-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (0/4/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

MFG: Manufacturing

MFG-120 Machine Trade Printreading I (1)
Introduces students to the importance of prints in industry. Covers the alphabet of lines and principles of sketching. Continues with an introduction to orthographic projection, auxiliary views, detail and assembly drawings, dimensions and tolerances, and sectional views. Title block information is covered along with materials lists, drawing notes and drawing change systems. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MFG-130 Machine Trade Printreading II (1)
Continues Machinist Trade Printreading I. Covers geometric dimensioning and tolerancing and the interpretation of advanced prints, including numerical control programming and documents. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MFG-135 Fabrication Print Reading I (2)
Introduces students to the importance of blueprints in industry. Covers topics such as the alphabet of lines, orthographic projection, auxiliary views, detail and assembly drawings, dimensions and tolerances and sectional views. Basic fabrication, machining, and welding prints are covered. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

MFG-136 Fabrication Print Reading II (2)
Continues Fabrication Print Reading I. Covers advanced print reading topics dealing with sheet-metal fabrication, welding and machining. Geometric dimensioning and tolerancing are included. Credits: 2, Hours: (2/0/0/0), Prereq: MFG-135; Arts & Sciences Elective Code: B

MFG-140 Geometric Dimensioning and Tolerancing (1)
Presents information concerning the special symbols used in geometric dimensioning and tolerancing. These symbols are a language used to communicate the ideas and intent of the designer to the people who manufacture the parts or the person who inspects the finished part. Credits: 1, Hours: (1/0/0/0), Prereq: MFG-120, MFG-130; Arts & Sciences Elective Code: B; Comments: Appropriate work experience may be taken in lieu of prerequisite course work

MFG-145 Light Machining for Maintenance Trades (4)
Covers machine/shop safety, machine theory, blueprint reading, tolerances, tooling selection, machine feed and speed, and proper usage of manual knee mills and manual lathes. Emphasizes print reading, mill and lathe usage, and machine maintenance, in a hands-on lab setting. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: B

MFG-175 Fabrication Welding - Sheet Metal (5)
Emphasizes hands-on plasma arc cutting, gas metal arc welding and gas tungsten arc welding processes and their application to the fabrication of sheet metal weldments. Covers basic machine theory, operations and safety. Credits: 5, Hours: (1/8/0/0), Arts & Sciences Elective Code: B

MFG-197 Material Properties (3)
Introduces the basic concepts of metallurgy, and other materials commonly found in manufacturing. Focuses on metal classification, welding pre/post heating techniques, heat treating, quenching and surface hardening. Emphasizes hands-on lab projects as well as classroom theory. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MFG-202 Manufacturing Processes (2)
Introduces students to modern manufacturing processes. Learning activities introduce special symbols used on mechanical drawings. Credits: 2, Hours: (0/4/0/0), Prereq: DRF-142, DRF-143; Arts & Sciences Elective Code: B

MFG-213 Basic Machine Theory (5)
Covers theory of operation of machining tools, metallurgy as it applies to manufacturing, identification and elementary heat treatment of steel. Safety is taught as it applies to each machine process. Proper terminology of the machinist trade is emphasized. Credits: 5, Hours: (5/0/0/0), Arts & Sciences Elective Code: B

MFG-215 Advanced Machine Theory (3)
Continues Basic Machine Theory. Covers more advanced principles in setup and operation of

lathes, mills and grinders. Introduces carbide lathe tools, milling cutters, and emphasizes productivity and accuracy. Covers theory of basic shaper setup and operation, and an introduction to basic turret lathe setups. Shop safety, cooperation and communication continue to be stressed. Credits: 3, Hours: (3/0/0/0), Prereq: MFG-227; Arts & Sciences Elective Code: B

MFG-222 Machine Operations I (4)
Covers lab use of basic measuring tools, layout and inspection tools, and bench work. Safe operation of machine tools and heat treating equipment is taught. Emphasis is on following blueprints and holding tolerances through the use of a variety of processes to produce a product. Credits: 4, Hours: (0/8/0/0), Coreq: MAT-735, MFG-120, MFG-213; Arts & Sciences Elective Code: B

MFG-227 Advanced Machine Operations I (4)
Continues MFG-222. More complex prints are used to introduce additional machine tool processes. Credits: 4, Hours: (0/8/0/0), Prereq: MFG-222; Coreq: MAT-735, MFG-120; Arts & Sciences Elective Code: B

MFG-228 Machine Operations II (4)
Covers advanced setup and operation of lathes, mills and grinders using different materials and cutters. Productivity and safe operation are emphasized. Credits: 4, Hours: (0/8/0/0), Prereq: MFG-227; Coreq: MAT-736, MFG-130, MFG-215; Arts & Sciences Elective Code: B

MFG-230 Advanced Machine Operations II (4)
Continues MFG-228. Use of carbide cutters is emphasized. Productivity and safety continue to be emphasized, along with more complex prints and setups. Credits: 4, Hours: (0/8/0/0), Prereq: MFG-228; Coreq: MAT-736, MFG-130, MFG-215; Arts & Sciences Elective Code: B

MFG-279 CNC Machine Operations (4)
Provides a basic understanding of CNC codes commonly used in a machine shop. Focuses on computer-based and hands-on training in code writing and CNC machine setup and operation, while producing various related projects. Credits: 4, Hours: (1/6/0/0), Arts & Sciences Elective Code: B

MFG-281 CNC Punch Press Operations (2)
Introduces theories and practices of manual and CNC punch press operation. Discusses machine operation and machine maintenance. Emphasizes sheet metal, precision measuring tools and tooling setup knowledge. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

MFG-283 Laser Operations (2)
Introduces basic theories and practices of machine operation, shop procedures, material properties and material handling. Covers programming and editing and adjusting parameters. Students perform inspections and routine machine maintenance. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

MFG-285 Applied Metallurgy (2)
Covers the basic theory of metals and their characteristics, including hardness, brittleness, durability, resistance to corrosion, machinability and welding. Teaches basic metallurgy techniques and operational sequences to produce quality parts and products efficiently and effectively. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

MFG-287 Shear and Press Brake Operations (3)
Covers theories and practices used in CNC press brake operations. Emphasizes blueprint interpretation, general machine setup procedures, production materials, inspection processes, quality assurance, and computer and math skills. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

MFG-288 Water Jet Operations (2)
Introduces basic theories and practices of machine operation, shop procedures, material properties and material handling. Covers programming and editing and adjusting parameters. Students perform inspections and routine machine maintenance. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

MFG-289 Automated Production Methods for AMET (3)
Introduces automation as it applies to machining, fabrication and welding. Covers automation feeding, automatic cycle repetition, robots and other equipment-oriented concepts. Studies theory of system concepts, such as mass production, batch processing and just-in-time processing. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

MFG-302 CNC Fundamentals (3)
Introduces computer numerical control as it relates to CNC lathes and milling machines. The use of microcomputers and related software is covered. Emphasizes input language, codes, machine setup and operation, inspection of parts, and communication with peripherals. Credits: 3, Hours: (1/4/0/0), Prereq: MFG-227, MFG-215; Arts & Sciences Elective Code: B

MFG-311 Intermediate CNC (6)
Continues the introductory course adding canned cycles, looping, sub-routines and interpretation of programs written by others. Internal machining on the lathes is covered. More complex parts and production of multiple parts will be undertaken. Credits: 6, Hours: (1/10/0/0), Prereq: MFG-302 or appropriate industrial experience; Arts & Sciences Elective Code: B

MFG-313 Advanced CNC (6)
Allows students to progress from the trainers to the full-size industrial CNC machines. Conversational programming is introduced, and advanced projects involving mating parts and short production runs are undertaken. Students are introduced to computer-assisted programming as it applies to CAD/CAM. Routine and preventive maintenance procedures are learned. Credits: 6, Hours: (0/12/0/0), Prereq: MFG-311 or appropriate industrial CNC programming experience; Arts & Sciences Elective Code: B

MFG-317 Automated Production Methods (5)
Covers computer-assisted programming and introduces students to automation as it applies to machining operations. Automatic machine feeding, automatic cycle repetition, robots and other equipment-oriented concepts are studied. System concepts such as mass production, batch processing and just-in-time processing are covered from a theoretical view. Credits: 5, Hours: (1/8/0/0), Prereq: MFG-313; Arts & Sciences Elective Code: B

MFG-318 Introduction to Fabrication Practices (5)
Introduces basic theories and practices used in precision sheet metal fabrication, including layout, shearing, punching and bending. Students apply theory concepts through practical lab projects, with emphasis on shop safety, cooperation and communication. Credits: 5, Hours: (2/6/0/0), Arts & Sciences Elective Code: B

MFG-390 Introduction to Automated Fabrication Practices (7)
Introduces CNC through water jet and turret punch techniques. Emphasizes equipment operation, programming, safety and maintenance, offline programming and troubleshooting. Credits: 7, Hours: (2/10/0/0), Prereq: MFG-318; Arts & Sciences Elective Code: B

MFG-391 Intermediate Automated Fabrication Practices (7)
Continues MFG-390. Focuses on complex problem solving and application, with emphasis on communications with respect to machines, computers or offline program systems. Introduces the laser cutter to demonstrate various cutting methods. Credits: 7, Hours: (2/10/0/0), Prereq: MFG-390; Arts & Sciences Elective Code: B

MFG-392 Advanced Automated Fabrication Practices (7)
Focuses on computer assist software for programming, and the steps of metal fabrication. Students complete multiple projects from start to finished product. Credits: 7, Hours: (2/10/0/0), Prereq: MFG-391; Arts & Sciences Elective Code: B

MFG-420 Jig and Fixture Design (4)
Covers theory of design and machining practices as they relate to jigs and fixtures used in manufacturing facilities. Introduces students to the importance of jig and fixture classification and to their uses in modern machine tools. Credits: 4, Hours: (4/0/0/0), Prereq: MFG-213 or MFG-215; Arts & Sciences Elective Code: B

MFG-500 Statistical Process Control (1)
Covers the current transformation methods of industry and business toward a complete quality control system. Includes management theory on quality, productivity and controlled charting techniques. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MFG-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MFG-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

MGT: Management

MGT-101 Principles of Management (3)
Applies current techniques and methods to the management functions of planning, organizing, leading and controlling. Focuses on critical analysis, development and effectiveness of organizational processes. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MGT-121 Project Management Basics (3)
Defines project management and examines the role of the project manager. Emphasizes on-the-job project management knowledge areas and processes. Practical applications and case studies are used to reinforce and apply concepts to real life situations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MGT-124 Project Management Tools (3)
Continues MGT-121, focusing on traditional project management tools and emerging project management technologies. Students develop a project plan, define and sequence tasks, identify critical path, allocate resources, estimate risks and maintain a budget. Uses popular project management software, such as MS Project and MS Excel. Credits: 3, Hours: (2/2/0/0), Prereq: MGT-121; Arts & Sciences Elective Code: B

MGT-130 Principles of Supervision (3)
Introduces the management functions of planning, organizing, leading and controlling. Focuses on technical supervision skills and human relations skills needed to develop a productive work team, and conceptual skills to group interdependent organizational processes. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MGT-133 Principles of Safety (1)
Students learn to identify key terms related to occupational health and safety; gain understanding of the legal and regulatory issues affecting occupational health and safety in the workplace, particularly the requirements under OSHA; study safety-related programs and policies, and employers' related liabilities; and evaluate effective safety management techniques and employee safety training programs. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-134 Work Habits and Absenteeism (1)
Normally taught as a one- or two-day workshop. Students are trained to develop a working atmosphere conducive to high productivity. Problem employees and their habits are identified. Students learn employee coaching techniques and policies that can be used to solve poor work habits and high absenteeism. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-135 Performance Appraisal for Managers (1)
Covers effective employee performance planning and appraisal techniques. Students learn how to conduct performance reviews and how to provide positive performance coaching and feedback to employees. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-137 Developing Leadership Skills (1)
Designed to give valuable suggestions on communicating effectively using coaching, counseling, delegating and performance reviews to develop subordinates. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-139 Effective Team Building for Managers (1)
Participants learn the basics of team management, how to motivate team members, how to improve the communication process and understand the principles of leadership. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-140 Time Management in the Workplace (1)
Focuses on high performance work times, being effective vs. being efficient, time wasters and solutions to them. Students also learn organizational skills, how to set goals, plan and prioritize. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-145 Human Relations in Management (3)
Emphasizes the importance of proper attitudes towards self, others and organization values. Stresses the development of a good self-concept and the relationship this has to energy levels, emotions, verbal and nonverbal communication. Prepares students to understand how to deal with conflict and how to be a productive member of a work group. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MGT-155 Integrated Project Management (3)
Allows students to practice managing a variety of projects from initiation to completion. Students demonstrate technical and applied knowledge gained in their field, as well as critical thinking, diverse perspectives and communication skills. Credits: 3, Hours: (3/0/0/0), Prereq: MGT-124; Arts & Sciences Elective Code: B

MGT-158 Office Supervision and Management (3)
Develops vocabulary and knowledge needed to examine sound principles and successful practices used by office managers to effectively and efficiently manage an office. This course provides students an opportunity to hone essential soft skills while exploring human resource issues. In addition, students design and implement an etiquette training module. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MGT-170 Human Resource Management (3)
Includes managerial philosophy of human resource administration, emphasizing the study of the personnel functions of recruiting, interviewing, selecting, placement, training and evaluating. Also addresses the issues of diversity in a dynamic environment. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MGT-172 Employment Practices (1)
Develops an understanding of human resource policies, and the legal and regulatory factors that affect employee recruitment and selection. Nondiscrimination and equal employment opportunity compliance issues are analyzed. Credits: 1, Hours: (1/0/0/0), Prereq: MGT-170; Arts & Sciences Elective Code: B; Comments: MGT-170 may be taken as a corequisite

MGT-173 Training and Employee Development (1)
Introduces effective training and development strategies and techniques. Examines adult learning styles, and reviews effective presentation and facilitation skills. Credits: 1, Hours: (1/0/0/0), Prereq: MGT-170; Arts & Sciences Elective Code: B; Comments: MGT-170 may be taken as a corequisite

MGT-182 Labor Relations and Collective Bargaining (1)
Introduces labor relations and collective bargaining with an emphasis on real-world situations. Reviews the historical and current status of labor and management positions. Examines contract negotiations, labor disputes and grievances, and issues in the maintenance of a union-free working environment. Credits: 1, Hours: (1/0/0/0), Prereq: MGT-170; Arts & Sciences Elective Code: B; Comments: MGT-170 may be taken as a corequisite

MGT-192 Managing Employee Benefit Programs (1)
Participants receive an understanding of the importance of an effective employee benefit program within organizations. Students analyze various programs' strengths and weaknesses to adapt the elements of a successful system to their own organization. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MGT-193 Wage and Salary Administration (1)
Provides a structured approach to the various elements of a compensation program: job descriptions, job evaluations, salary surveys and administration policies. Covers variable pay and executive compensation. Credits: 1, Hours: (1/0/0/0), Prereq: MGT-170; Arts & Sciences Elective Code: B; Comments: MGT-170 may be taken as a corequisite

MGT-300 Introduction to Entrepreneurship (3)
Examines the feasibility of a new business concept and the fundamentals of organizing a small business. Students measure their potential as an entrepreneur, identify business opportunities, examine entry strategies, understand the advantages and disadvantages of buying a business and evaluate the value of that business. Focuses on realizing business strengths, weaknesses, opportunities and threats. Implements the planning process through feasibility and business plans. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MGT-301 Progressive Management Trends & Careers (3)
Emphasizes current trends in management and upper-level management concepts such as planning, organizing, leading and controlling. Provides a career component that focuses on employment tools, tips, preparation and industry exploration. Credits: 3, Hours: (3/0/0/0), Prereq: MGT-101, MGT-145; Arts & Sciences Elective Code: B

MGT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MGT-928 Independent Study (1-4)
Taken concurrently with a standard course in the student's area of specialty. Special projects and/or individual readings are assigned by the program coordinator or an individual staff member. Projects must be approved before the beginning of the semester in which the work is to be done. Credits: 1-4, Hours: (1-4/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

MIL: Military

MIL-100 Foundations of the U.S. Air Force I (1)
Introduces the U.S. Air Force and Air Force Reserve Officer Training Corps (AFROTC). Features the history and structure of the Air Force, its capabilities, career opportunities, installations, and core values while developing team building, communication and leadership skills. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-101 Foundations of the U.S. Air Force II (1)
Continues Foundations I. Provides more information about the U.S. Air Force and Air Force Reserve Officer Training Corps (AFROTC). Features the history and structure of the Air Force, its capabilities, career opportunities, installations, and core values while developing team building, communication and leadership skills. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-104 Army ROTC Leadership & Personal Development (1-3)
This is the first semester in a four-semester sequence that is the "basic course" of Army ROTC. This course introduces cadets to the military personal challenges and competencies that are critical for effective leadership. Cadets learn how the personal development of life skills such as critical thinking, goal setting, time management, physical fitness, and stress management relate to leadership, officership, and the Army profession. The focus is on developing basic knowledge and comprehension of Army leadership dimensions while gaining a big picture understanding of the ROTC program, its purpose in the Army, and its advantages for the student. No military obligation is associated with participation in the course. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: A

MIL-105 Army ROTC Introduction to Tactical Leadership (1-3)
This is the second semester in a four-semester sequence that is the "basic course" of Army ROTC. The course builds on the foundations of officership that were developed in the first semester class. This course overviews leadership fundamentals such as setting direction, problem-solving, listening, presenting briefs, providing feedback, and using effective writing skills. Cadets explore dimensions of leadership values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises. Cadre role models and the building of stronger relationships among the cadets through common experience and practical interaction are critical aspects of the experience. No military obligation is associated with participation in the course. Credits: 1-3, Hours: (1-3/0/0/0), Prereq: MIL-104; Arts & Sciences Elective Code: A

MIL-111 AFROTC Leadership Lab I (1)
Develops knowledge of what is required to be an Air Force officer by honing leadership skills through hands-on experience and performing various tasks at the University of Iowa AFROTC Detachment. Faculty supervise all labs, but students plan and conduct all events. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-112 AFROTC Leadership Lab II (1)
Develops knowledge of what is required to be an Air Force officer by honing leadership skills through hands-on experience and performing various tasks at the University of Iowa AFROTC Detachment. Faculty supervise all labs, but students plan and conduct all events. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-200 The Evolution of USAF Air & Space Power I (1)
Presents general aspects of air and space power through historical perspectives. Covers the time from the first balloons and dirigibles to the Space Age global positioning systems of the Persian Gulf War. Historical examples define the Air Force's capabilities and missions, and demonstrate the evolution of today's USAF air and space power. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-201 The Evolution of USAF Air & Space Power II (1)
Continues Evolution I. Presents additional information on the general aspects of air and space power through historical perspectives. Covers the time from the first balloons and dirigibles to the Space Age global positioning systems of the Persian Gulf War. Historical examples define the Air Force's capabilities and missions, and demonstrate the evolution of today's USAF air and space power. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-204 Army ROTC Innovative Team Leadership (1-3)
This is the third semester in a four-semester sequence that is the "basic course" of Army ROTC. The course explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework (trait and behavior theories). Cadets practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises and participating in leadership labs. Focus is on continued development of the knowledge of leadership values and attributes through an understanding of Army rank, structure, and duties, and basic aspects of land navigation and squad tactics. No military obligation is associated with participation in the course. Credits: 1-3, Hours: (1-3/0/0/0), Prereq: MIL-105; Arts & Sciences Elective Code: A

MIL-205 Army ROTC Tactical Leadership (1-3)
This is the final semester in a four-semester sequence that is the "basic course" of Army ROTC. The course examines the challenges of leading tactical teams in the complex contemporary operating environment (COE). The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leadership in the context of military operations. Cadets develop greater self-awareness as they assess their own leadership styles and practice communication and team building skills. No military obligation is associated with participation in the course. Credits: 1-3, Hours: (1-3/0/0/0), Prereq: MIL-204; Arts & Sciences Elective Code: A

MIL-211 AFROTC Leadership Lab III (1)
Develops knowledge of what is required to be an Air Force officer by honing leadership skills through hands-on experience and performing various tasks at the University of Iowa AFROTC Detachment. Faculty supervise all labs, but students plan and conduct all events. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MIL-212 AFROTC Leadership Lab IV (1)
Develops knowledge of what is required to be an Air Force officer by honing leadership skills through hands-on experience and performing various tasks at the University of Iowa AFROTC Detachment. Faculty supervise all labs, but students plan and conduct all events. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

MKT: Marketing

MKT-110 Principles of Marketing (3)
Studies the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create the exchanges that satisfy individual and organizational goals. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MKT-140 Principles of Selling (3)
Provides basic skills needed to sell goods and services in a marketing economic system. Students learn about careers in selling, buyer behavior, product knowledge and selling concepts. Emphasis is on problem solving. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MKT-150 Principles of Advertising (3)
Acquaints students with the philosophy of advertising, historical concepts, and practical applications of advertising at the local and national levels. Includes media and media selection, copywriting, and layout, with an emphasis on product selection for advertising. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MKT-160 Principles of Retailing (3)
Studies retailing and its functions in a free enterprise system. All facets of retail operation are considered including planning, organization, personnel, facilities, control, pricing, buying, selling and promotion. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MKT-168 Buying and Merchandising Strategies (3)
Studies buying and merchandising principles as they apply to management. Decision-making and critical thinking skills are developed in buy-

ing, inventory control and pricing. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

MKT-180 Customer Service Strategies (1)
Designed to help students target their customers and develop appropriate services. Discusses the use of effective customer services as a competition tool. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

MKT-187 Perspectives in International Marketing (1-3)
Provides an international perspective on marketing from a Danish and European perspective. Students travel to Denmark to study and compare that country's approach to marketing with that of North America. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: B

MKT-190 International Marketing (3)
Covers the theoretical and practical concepts of international marketing. A clear delineation of marketing functions in domestic and international business is stressed. Other topics covered include cultural dynamics of the global markets, political and legal environment and multinational markets. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MKT-195 Marketing Management (3)
Examines the marketing process from product conception to production and delivery. Emphasizes marketing plan development, situation analysis, marketing strategies and product management for both new and current products. Utilizes a capstone simulation project to develop and enhance marketing and management skills. Credits: 3, Hours: (3/0/0/0), Prereq: MGT-101, MKT-110; Arts & Sciences Elective Code: A

MKT-297 Marketing and Advertising for Entrepreneurs (3)
Introduces business concepts, market research and target markets. Focuses on understanding customers and the competition, product pricing, customer service and selling. Explores advertising media and conducting a successful marketing campaign using various forms of advertising and promotion. Credits: 3, Hours: (3/0/0/0), Prereq: MGT-300; Arts & Sciences Elective Code: A

MKT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MKT-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

MMS: Mass Media Studies

MMS-101 Mass Media (3)
Surveys the field of mass communications. Takes the theoretical position that mass communication is a social system, considering the functions, structure and performance of the individual medium, as well as the auxiliaries. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MMS-104 Introduction to Electronic Production (2)
Presents basic principles and techniques used in audio and video production. Emphasizes studio operation, including how to operate cameras and studio switchers, and how to serve as floor director. Includes audio techniques such as operation of audio console and use of prerecorded music. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

MMS-131 News Reporting (3)
Involves an in-depth study of objective news reporting and advocacy journalism as well as training in writing leads, the news story, interviewing, copyright and editing. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Ability to type 30 wpm required

MMS-133 News Media Convergence (3)
Introduces skills required for print, broadcast and Web journalism. Students develop skills that include identifying news, interviewing and event coverage, researching, reporting, writing print and broadcast material and converting it to the Web. Final versions of stories will be evaluated for publication in the Communique, broadcast on KSP News and posted to the Kirkwood Student Media Web site. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of program coordinator

MMS-155 Visual Reporting (2)
Introduces communication with photo graphics, editing and combining words and photographs for newspapers, magazines and brochures. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: A

MMS-200 Advanced Audio (2)
Teaches recording, editing and audio production techniques. Students conduct interviews and create music sound tracks. Credits: 2, Hours: (1/2/0/0), Prereq: MMS-104; Arts & Sciences Elective Code: A

MMS-215 Broadcast Writing and Performance (3)
Emphasizes scripts and commercial writing skills. Students will announce and perform before microphones and cameras. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MMS-220 Advanced Television (2)
Designed to teach students the proper operation of remote video and audio equipment. Course emphasizes script writing and videotape editing. Final projects will be televised on Kirkwood's cable channel. Credits: 2, Hours: (1/2/0/0), Prereq: MMS-104; Arts & Sciences Elective Code: A

MMS-240 Promotions and Public Relations (3)
Teaches students how to plan an effective promotional campaign by identifying target audiences, understanding the effect of mass communication media and preparing materials for media campaigns. Includes principles of design and layout. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MMS-920 Field Experience (3)
Provides on-the-job training in the media field. Credits: 3, Hours: (0/0/9/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor/coordinator

MMS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MMS-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

MMS-948 Special Projects (1)
Provides opportunity to carry out a media project under professional direction. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

MTR: Medical Transcription

MTR-102 Professionalism in Medical Transcription (2)
Provides an overview of the career through lectures, job shadowing and a tour, with an emphasis on professional issues and confidentiality. Credits: 2, Hours: (2/0/0/0), Coreq: HSC-115; Arts & Sciences Elective Code: B

MTR-112 Medical Transcription (2)
Develops skills of transcribing various medical reports with an emphasis on the proper use of medical terminology. Introduces transcription systems and management techniques. Confidentiality in the completion of medical reports is stressed. Credits: 2, Hours: (1/2/0/0), Prereq: MTR-102; Coreq: HSC-115; Arts & Sciences Elective Code: B

MTR-113 Medical Transcription (2.5)
Develops skills of transcribing various medical reports with an emphasis on the proper use of medical terminology. Introduces transcription systems and management techniques. Confidentiality in the completion of medical reports is stressed. Credits: 2.5, Hours: (2.5/0/0/0), Coreq: HSC-115, MTR-102; Arts & Sciences Elective Code: B

MTR-150 Career Medical Transcription (6.5)
Includes transcribing physician-dictated reports with an emphasis on developing accuracy, speed and medical knowledge for transcription of medical reports. Correct usage of grammar, punctuation, editing and proofreading skills are emphasized along with professionalism and confidentiality. Credits: 6.5, Hours: (6.5/0/0/0), Prereq: MTR-113; Arts & Sciences Elective Code: B; Comments: All Medical Transcription courses

MTR-180 Medical Transcription Professional Practice Experience (0.5)
Combines the theory of medical transcription with supervised practice in selected health care settings. Introduces the student to the medical transcription department, its specific dictation transcribing system and routing of transcribed

reports, including health care provider specific dictation practices. Credits: 0.5, Hours: (0/0/1.5/0), Prereq: ADM-165, MTR-102; Coreq: HSC-217, MTR-150; Arts & Sciences Elective Code: B

MTR-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MTR-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

MUA: Music - Applied

MUA-300 Applied Baritone (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-301 Applied Bassoon (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-302 Applied Cello (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-303 Applied Clarinet (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-304 Applied Drum Set (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-305 Applied Flute (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-306 Applied French Horn (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-307 Applied Guitar (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-308 Applied Oboe (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-309 Applied Organ (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-310 Applied Piano (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-311 Applied Saxophone (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-312 Applied String Bass (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-313 Applied Synthesizer (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-314 Applied Trombone (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-315 Applied Trumpet (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-316 Applied Tuba (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-317 Applied Viola (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-318 Applied Violin (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUA-319 Applied Voice (1-2)
Requires 14 lessons during the semester. Students may enroll in one or two credit hours on the same instrument. One 25-minute lesson per week is one credit; one 50-minute lesson per week is two credits. May be repeated for credit. Additional outside practice/preparation is required. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUS: Music - General

MUS-100 Music Appreciation (3)
Includes study of elements and forms of music with attention to major historical periods and composers of historical significance and survey of indigenous music. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MUS-102 Music Fundamentals (3)
Introduces music majors and nonmajors to the principal elements of music theory including notation, melody, choral harmony and musical form. Intended for students with strong interest but limited background in music theory. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MUS-120 Music Theory I (3)
Studies the notation of pitch and rhythm, meter, major and minor key relationships, melodic structure, intervals, triads, two-part counterpoint, the basics of four-part harmony and instrument transposition. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MUS-121 Music Theory II (3)
Studies seventh chords (spelling, quality, inversions, Roman numerals and figures) and the use of all inversions of diatonic seventh chords in four-part harmony, melodic phrase structures and the harmonization of melody, the concepts of modulation and tonicization (secondary-dominant function chords), and binary and ternary forms. Credits: 3, Hours: (3/0/0/0), Prereq: MUS-120; Arts & Sciences Elective Code: A

MUS-135 Music Theory Lab I (1)
Supports the objectives in MUS-120 by developing skills in ear training (aural identification of scales, intervals and chords), dictation (rhythmic, melodic and harmonic), and sight singing. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

MUS-136 Music Theory Lab II (1)
Continuation of Music Theory Lab I. Supports the objectives in MUS-121 by developing skills in ear training (aural identification of scales, intervals and chords), dictation (rhythmic, melodic and harmonic) and sight singing. Credits: 1, Hours: (0/2/0/0), Prereq: MUS-135; Arts & Sciences Elective Code: A

MUS-140 Concert Choir (1)
Serves students with ability and desire to sing in a mixed-voice group. May be repeated for credit. Credits: 1, Hours: (0/0/3/0), Arts & Sciences Elective Code: A

MUS-145 Concert Band (1)
Introduces new literature each semester to extend the experience of the student's learning to read and play different styles and tempos. This group is open to community members and does not require an audition. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

MUS-150 Chamber Ensemble (1)
Students practice and perform traditional literature for trios, quartets and other small groups. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

MUS-157 Vocal Jazz Ensemble (1)
Provides auditioned members an opportunity to sing a variety of jazz styles from traditional to contemporary arrangements. May be repeated for credit. Credits: 1, Hours: (0/5/0/0), Arts & Sciences Elective Code: A

MUS-163 Instrumental Jazz Ensemble (1)
Explores various styles of jazz from traditional to contemporary through a performance-oriented class. May be repeated for credit. Credits: 1, Hours: (0/0/0/4), Arts & Sciences Elective Code: A

MUS-165 Jazz Combo (1-2)
Explores various styles of jazz in a small group setting and emphasizes improvisational techniques. This course must be taken for a grade, may not be challenged and is transferable. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A

MUS-191 Jazz Improvisation (2)
Studies theoretical principles and techniques used in the jazz idiom. Provides opportunity for application of music theory at the performance level to include scales, chord progressions, melodic patterns and rhythmic elements. Recommended for both instrumentalists and vocalists. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

MUS-193 Jazz Improvisation II (2)
Continues the study as outlined in Jazz Improvisation. Credits: 2, Hours: (2/0/0/0), Prereq: MUS-191; Arts & Sciences Elective Code: A

MUS-208 American Popular Music & Jazz (3)
Examines the evolution of American popular music styles and jazz genres from their early stages to the present. Emphasizes important individual works, composers and performers of jazz, rock, folk, blues and others. Enlarges the use of basic music vocabulary, improves aural perception of style and genre, and encourages a fuller understanding of how popular music and jazz enrich life, function in society and reflect cultural diversity. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MUS-209 Topics in Western Music History (3)
Examines style periods, composers and works of Western art music from c. AD 600 to the present, and explores the issues that influenced their composition. Through reading, listening and discussion, the course builds a basic musical vocabulary, improves aural perceptions of form and genre, and encourages a deeper appreciation for music as cultural expression and personal enrichment. Music reading is helpful, but not necessary. Intended for students with strong interest in music. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MUS-220 Music Theory III (3)
Studies plainchant and modal theory; early polyphony in 2, 3 and 4 voices; inventions and fugues; borrowed, Neapolitan and augmented sixth harmonies; harmonic and melodic variations; sonata form and rondo form. Examines and analyzes music from the medieval period through the early Romantic era. Credits: 3, Hours: (3/0/0/0), Prereq: MUS-121; Arts & Sciences Elective Code: A

MUS-221 Music Theory IV (3)
Studies enriched and chromatically altered harmonies and enharmonic modulation; instrument transposition and the orchestral score; the materials of Impressionism; tonality in the 20th century; and atonality, set theory and twelve-tone structures. Examines and analyzes music from the 1820s to the present. Credits: 3, Hours: (3/0/0/0), Prereq: MUS-220; Arts & Sciences Elective Code: A

MUS-235 Music Theory Lab III (1)
Supports the objectives in MUS-220 by developing advanced skills in ear training (aural identification of scales, intervals and chords), dictation (rhythmic, melodic and harmonic) and sight singing. Credits: 1, Hours: (0/2/0/0), Prereq: MUS-136; Arts & Sciences Elective Code: A

MUS-236 Music Theory Lab IV (1)
Continuation of Music Theory Lab III. Supports the objectives in MUS-221 by developing advanced skills in ear training (aural identification of scales, intervals and chords), dictation (rhythmic, melodic and harmonic) and sight singing. Credits: 1, Hours: (0/2/0/0), Prereq: MUS-235; Arts & Sciences Elective Code: A

MUS-259 Intro to MIDI (3)
Presents an overview of and practical experience music-related hardware and software products. Introduces Musical Instrument Digital Interface (MIDI), along with digital audio and its application to composition, orchestration, recording, performance and education. Includes drum programming, plug-ins, loops, soft synths, instrument patch maps, MIDI/Audio editing and file conversion. Emphasizes sequencing software and synthesizers to produce music projects. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Knowledge of basic music fundamentals required.

MUS-261 Intro to MIDI (2)
Presents an overview of and practical experience music-related hardware and software products. Introduces Musical Instrument Digital Interface (MIDI), along with digital audio and its application to composition, orchestration, recording, performance and education. Includes drum programming, plug-ins, loops, soft synths, instrument patch maps, MIDI/Audio editing and file conversion. Emphasizes sequencing software and synthesizers to produce music projects. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Knowledge of basic music fundamentals required.

MUS-263 Advanced MIDI (3)
Emphasizes advanced Musical Instrument Digital Interface (MIDI) topics and explores, in detail, MIDI and digital audio components. Includes sample libraries, groove clips, soft synths, MIDI/audio/video synchronization, electronic keyboards and signal processors. Students create original compositions and music projects of increasing complexity with Sonar sequencing and Finale notation programs. Credits: 3, Hours: (3/0/0/0), Prereq: MUS-259; Arts & Sciences Elective Code: A

MUS-268 Audio Production I (3)
Studies the history, theory and techniques of audio production. Focuses on the fundamentals of sound: what it is, how it is created and how we perceive it. Studies capturing, editing, mixing and

mastering audio using a variety of analog and digital equipment, and computer software such as Pro Tools, Logic Pro, Sonar and SAW. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

MUS-269 Audio Production II (3)
Continues the study of the history and theory of audio production. Expands on the fundamentals of sound by working with diverse musical ensembles and events. Studies advanced recording, mixing and mastering techniques in a variety of hands-on, real world situations. Credits: 3, Hours: (2/2/0/0), Prereq: MUS-268; Arts & Sciences Elective Code: A

MUS-284 Songwriting (2)
Develops skills in melody, harmony and arranging, as well as creative approaches to musical composition, lyric writing and an individual writing style. Students focus on both songwriting and performance, culminating in a portfolio of their original songs. Emphasis is on computer music technology. Students complete a portfolio of several songs that typify various current practices of contemporary songwriters. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A; Comments: Basic music fundamentals, familiarity with basic computer skills. Requires permission of instructor.

MUS-286 Sound Reinforcement (3)
Continues the study of the history and theory of audio production, as it relates specifically to live sound engineering. Applies the knowledge of live sound engineering while working with diverse musical ensembles and events, in a variety of hands-on, real world situations. Credits: 3, Hours: (2/2/0/0), Prereq: MUS-268; Arts & Sciences Elective Code: A

MUS-288 Topics in Modern Music Industry (2)
Studies diverse issues such as copyright, publishing, hearing loss, MP3/iPod/Internet music culture, the Volume War, the analog versus digital debate, the importance of sound quality in audio productions, the future of music/audio production and more, as they relate to the average listener/consumer, musicians and audio professionals. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

MUS-298 Performance Seminar for Musicians (1)
Provides the opportunity to develop and improve performing techniques required of all musicians. Emphasizes student performances, development of repertoire and discussion of performance style. Required of all music majors and open to all students enrolled in applied lessons. May be taken four times for credit. Credits: 1, Hours: (0/2/0/0), Coreq: Any applied music lesson MUA-300 through MUA-319; Arts & Sciences Elective Code: A

MUS-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

MUS-928 Independent Study (1-2)
Allows the student to pursue a special concentration of music study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

NET: Computer Networking

NET-122 Computer Hardware Basics (3)
Introduces the operation of a modern personal computer from a hardware point of view. Students learn about the basic components of a computer and develop troubleshooting skills for advanced courses. Some of the areas covered include system boards, storage drives, memory and power supplies. In addition, some software topics, such as operating systems, are presented. Low-level laboratory exercises enhance and reinforce understanding of the material covered. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

NET-137 Advanced PC Concepts (3)
Follows and builds on the prerequisite, Computer Hardware Basics. The first half of the course is spent reviewing, but also going into more depth on the topics covered in the beginning hardware course. The second half of the course deals primarily with software considerations (such as BIOS, drivers and operating systems) necessary to understanding how modern PCs work. Throughout the course, tie-in to A+ certification topics is done for the benefit of those who plan to take the Comp-TIA exam. Credits: 3, Hours: (2/2/0/0), Prereq: NET-122; Arts & Sciences Elective Code: B

NET-154 Networking Basics (3)
Introduces the foundations of networking, including concepts, terminology and practical experience, to explore entry-level career opportunities in IT and networking. Provides a hands-on approach to learn and use networking tools as they apply to home and small businesses. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

NET-174 LAN Administration (3)
Focuses on the hardware and software requirements of a client-server network, the installation process, workstation configuration and configuration of the user environment using a current network operating system. Includes workstation and server configuration, network printing setup, creation and management of network user accounts, security, scripting, directory structures, and file server management and monitoring. Introduces network administrator duties, such as network configuration and system support. Credits: 3, Hours: (2/2/0/0), Prereq: NET-212; Arts & Sciences Elective Code: B

NET-184 Wide Area Network (WAN) Basics (2)
Introduces the student to concepts used to connect multiple local area networks to form a wide area network. Topics include routing, hardware used to connect network segments, leased telephone lines, dial-up telephone lines and other transmission media. Credits: 2, Hours: (2/0/0/0), Prereq: NET-222; Arts & Sciences Elective Code: B

NET-190 Critical Problem Solving (1)
Assigns everyday opportunities to the student to research, hypothesize several solutions and use one of the solutions to solve the problem effectively and efficiently. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

NET-192 Network Cabling (3)
Introduces students to the advanced concepts of network infrastructure. Students learn what types of media are used and the concepts about the manufacture and installation of that media. Additionally, students work with copper media in installation, trim-out and finishing. Other topics include infrastructure standards, request for proposals and basic electrical theory. Credits: 3, Hours: (2/2/0/0), Prereq: NET-232; Arts & Sciences Elective Code: B

NET-212 Cisco Networking (3)
Provides the student with a basic understanding of networking. Topics include OSI model and industry standards, network topologies, IP addressing with subnet mask, networking components and basic network design. This course is the prerequisite to Cisco NetWare Routing, Cisco Router Basics and Cisco Telecommunications. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

NET-222 Cisco Routers (3)
Introduces students to the Cisco family of routers, setup, configuration and management of using routers in a network environment. Credits: 3, Hours: (2/2/0/0), Prereq: NET-212; Arts & Sciences Elective Code: B

NET-232 Cisco Switches (3)
Introduces the concepts and terminology, through a comprehensive, theoretical and practical approach, to network and protocol design for implementation of converged switched networks. Includes hierarchical network design, device selection, basic switch configuration, implementing virtual LANs with VLAN Trunking Protocol, and Inter-VLAN routing within a small-to-medium converged network. Credits: 3, Hours: (2/2/0/0), Prereq: NET-222; Arts & Sciences Elective Code: B

NET-242 Cisco Wide Area Networks (WAN) (3)
Provides the student with a basic understanding of how Cisco routers are integrated with PBX interfaces. Topics include hardware used to connect networks using leased and dial-up telephone lines. Credits: 3, Hours: (2/2/0/0), Prereq: NET-232; Arts & Sciences Elective Code: B

NET-321 Windows Networking (3)
Allows students to design and build LANs with various versions of Microsoft Windows workstation software. Students learn software and hardware requirements, operating system installation, operation and maintenance, and networking techniques. Credits: 3, Hours: (2/2/0/0), Prereq: NET-154 or NET-212; Arts & Sciences Elective Code: B

NET-323 Windows Network Management (3)
Explains administrative duties for Windows Server 2003. Includes installing, configuring and maintaining client and server operating systems, monitoring performance and supporting users, evaluating different versions of Server 2003, exploring services such as DHCP, Clustering,

Remote Access, DNS, Virtual Private Networking, and learning to implement security using permissions, encryption and policies. Credits: 3, Hours: (2/2/0/0), Prereq: NET-561; Arts & Sciences Elective Code: B

NET-338 Directory Concepts (3)
Covers basic network design, how directory services are used to manage users, and how to pick servers based on proper utilization. Students learn basic elements and design of both Novell E-directory, Microsoft active directory and related LDAP directory services. Additionally, students are introduced to server concepts including system requirements, volume management and security. Credits: 3, Hours: (3/0/0/0), Prereq: NET-212; Arts & Sciences Elective Code: B

NET-400 Linux Networking (3)
Focuses on Linux GUI. Introduces Linux installation, navigating the Linux GUI, creating Linux users and groups, setting up Linux file and directory permissions, managing the Linux file system, using the Linux control panel to customize the system, configuring the Linux network, and developing basic command line and DNS skills. Credits: 3, Hours: (2/2/0/0), Prereq: NET-321; Arts & Sciences Elective Code: B

NET-561 Directory Administration (3)
Continues Directory Concepts. Focuses on implementation of Active Directory using Windows Server, and eDirectory using NetWare 6.x. Includes configuration and management of organizations, users, groups, printers, file systems, and many other directory service objects. Introduces virtualization concepts and students deploy software in a virtual environment. Credits: 3, Hours: (2/2/0/0), Prereq: NET-174, NET-338; Arts & Sciences Elective Code: B

NET-571 Server Configuration (3)
Emphasizes managing Linux in a multi-server enterprise environment. Introduces enterprise-level skills in integrating Linux servers in a multiple server environment, configuring advanced network services such as FTP, VPNs, remote management, Web services, DNS, DHCP, LDAP Directory Services, logical volume management, scripting and advanced software installation. Other services may include e-mail and LAMP package management. Credits: 3, Hours: (2/2/0/0), Prereq: NET-400, NET-561; Arts & Sciences Elective Code: B

NET-572 VMware Certified Advanced Professional (VCAP) (3)
Emphasizes security, advanced troubleshooting and performance management for VMware Virtual Infrastructure. Prepares students for the VMware Certified Advanced Professional (VCAP) Data Center Administrator exam. Credits: 3, Hours: (2/2/0/0), Prereq: NET-599; Arts & Sciences Elective Code: B

NET-599 Information and Storage Management (3)
Emphasizes advanced storage architectures, protocols and systems, including Network-Attached Storage (NAS), iSCSI Storage Area Networks (SAN), Fibre Channel Networks, Internet Protocol SANs (IPSAN) and Content-Addressable Storage (CAS). Prepares student for the EMC Proven Professional Associate Certification exam. Credits: 3, Hours: (2/2/0/0), Prereq: NET-616; Arts & Sciences Elective Code: B

NET-600 Network Security Basics (3)
Introduces students to basic network security concepts. The non-vendor specific course includes general security concepts, authentication, attacks, secure communications and Internet security. Additional topics include perimeter defense and intruder detection. This course begins student preparation for the Security+ exam. Credits: 3, Hours: (2/2/0/0), Prereq: NET-174, NET-212; Arts & Sciences Elective Code: B

NET-616 VMware VCP (3)
Emphasizes virtual network design and implementation, in an enterprise environment. Includes basic storage area networks, high availability design, virtual system management, virtual switching and virtualization security. Covers the vSphere 5.0 VMware Certified professional (VCP) exam domains. Credits: 3, Hours: (2/2/0/0), Prereq: NET-400, NET-600; Arts & Sciences Elective Code: B

NET-618 Network Defense & Remote Access Configuration (3)
Focuses on network defenses and defensible networks. Includes basic network defense topologies, basic DMZ configuration, basic intrusion detection configuration and logical security management (proper address assignment, software configuration). Examines identity management systems, such as directory services, to provide authentication, authorization and auditing for sound security management. Includes basic remote access configuration. Credits: 3, Hours: (2/2/0/0), Prereq: NET-600, NET-630; Arts & Sciences Elective Code: B

NET-619 Network Attacks: Detection, Analysis & Countermeasures (3)
Provides students the opportunity to attack computer networks to test their defenses and teaches them how to analyze attacks. Topics include attacks and attack analysis, intrusion detection and analysis, and advanced defense countermeasure configuration using firewalls, routers and intrusion detection systems. Credits: 3, Hours: (2/2/0/0), Prereq: NET-618; Arts & Sciences Elective Code: B

NET-630 Cyber Law and Ethics (3)
Covers basic laws and ethical behavior associated with network security. Topics include discussions about current common practices used to secure networks as well as test them, and the potential these methods can have in creating a secure network environment. Also included are discussions about HIPAA and Sarbanes-Oxley laws, and the impact they have on information technology practices. Credits: 3, Hours: (3/0/0/0), Coreq: NET-600; Arts & Sciences Elective Code: B

NET-680 TCP/IP for Networking (3)
Introduces students to the concepts of the TCP/IP suite of protocol. Students learn IP addressing, dynamic host configuration protocol, domain name services, universal naming conventions and how this protocol is used to connect to the Internet. Credits: 3, Hours: (2/2/0/0), Prereq: NET-232; Arts & Sciences Elective Code: B

NET-785 Fundamentals of Desktop Support (3)
Introduces the concepts of supporting personal computers as a career. Students improve their proficiency in providing personal computer support by troubleshooting real-life scenarios including specification/management considerations, and customer service skills. Lab may include students volunteering at not-for-profit organizations upgrading computers and computer peripherals. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

NET-850 Special Topics for PC Technicians (3)
Focuses on the two intertwining themes of today's networking technician: the history/future of computer technology and the social implications of that technology. Projects, expert speakers and possibly field trips are used to help explore such diverse topics as ethical computing, computer career trends, encryption and security, the wireless world, and the human face of computing. Credits: 3, Hours: (2/2/0/0), Prereq: NET-122; Arts & Sciences Elective Code: B

NET-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

NET-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

OTA: Occupational Therapy Assistant

OTA-100 Foundations of Occupational Therapy (3)
Introduces the philosophical, ethical and theoretical concepts of the current practice of occupational therapy. Provides an overview of the role of the OTR and COTA in the processes of patient evaluation, treatment planning, implementation and discharge. Presents note writing and goal development. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

OTA-150 Occupational Therapy Assistant Medical Terminology (1.5)
Introduction to medical terminology, including prefixes, suffixes, root words, and combining forms. Presents medical terminology specific to the practice of the OTA. Credits: 1.5, Hours: (1.5/0/0/0), Coreq: OTA-100, OTA-207; Arts & Sciences Elective Code: B

OTA-200 Community Health and Special Populations (5)
Provides knowledge and instruction for the intervention, prevention, and maintenance techniques that create optimal occupational performance in individuals and populations. Clinical observation experience is included. Credits: 5, Hours: (3/4/0/0), Prereq: BIO-161, OTA-100, OTA-150, OTA-207, OTA-208, PSY-111; Arts & Sciences Elective Code: B

OTA-205 Occupational Therapy Assistant Management (2)
Includes the basic principles of management for the OTA. Topics include levels of authority and

responsibility, supervisory process, performance appraisals, and policies and procedures. Discusses state and professional association regulations and legal/ethical issues. Explores reimbursement systems and their impacts on health care as well as instruction in public policy and professional advocacy. Covers resume writing, interviewing and employability skills. Credits: 2, Hours: (2/0/0/0), Prereq: OTA-850; Coreq: OTA-851; Arts & Sciences Elective Code: B

OTA-207 OT Methods I (3)
Introduces methods and techniques used in OT. Provides knowledge and skill in the use of activity analysis, task analysis and occupational performance. Addresses human diversity in relation to occupation. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

OTA-208 Occupational Development (2.5)
Presents normal physical and psychosocial development processes which affect an individual throughout the lifespan. Emphasis on integration of physical, psychosocial, cognitive, social and cultural aspects of occupational development. Clinic observation experience is included. Credits: 2.5, Hours: (2.5/0/0/0), Coreq: OTA-100, OTA-207, PSY-111; Arts & Sciences Elective Code: B

OTA-211 Pathophysiology for the OTA (4)
Presents clinical disorders and diseases commonly treated in the field of occupational therapy. Pathology, etiology, diagnosis, signs, symptoms and prognosis are covered. Credits: 4, Hours: (4/0/0/0), Prereq: BIO-161, OTA-100, OTA-207; Arts & Sciences Elective Code: B

OTA-212 Functional Kinesiology (3)
Provides a basic understanding of normal body movement as related to skeletal, muscular and neurological systems. Students learn muscle origin, insertion and action, joint structure, anatomical palpation, human gait, and movement analysis during functional activities and daily life skills. Credits: 3, Hours: (2/2/0/0), Prereq: BIO-161, OTA-100; Arts & Sciences Elective Code: B

OTA-306 OT Methods II (3)
Presents evaluations and treatment methods for individuals and groups used in occupational therapy. Emphasis on the instruction and adaptation of daily living skills and sensorimotor activities. Presents information on positioning and wheelchair selection. Documentation of the treatment process is presented. Credits: 3, Hours: (2/2/0/0), Prereq: OTA-207; Arts & Sciences Elective Code: B

OTA-308 Physical Dysfunction I (4)
Presents theory, evaluation and treatment technique for physical and cognitive occupational dysfunction. Credits: 4, Hours: (3/2/0/0), Prereq: OTA-100, OTA-211, OTA-212; Arts & Sciences Elective Code: B

OTA-309 Physical Dysfunction II (4)
Students apply treatment technique for physical and cognitive disabilities. Credits: 4, Hours: (3/2/0/0), Coreq: OTA-308; Arts & Sciences Elective Code: B

OTA-405 Psychosocial Dysfunction (4)
Presents diagnosis, symptomology and etiology of psychosocial dysfunction. Discusses theory, evaluation, and treatment techniques for individuals and groups with psychosocial impairments. Provides knowledge of OTR and COTA role delineation in psychiatric settings. Credits: 4, Hours: (4/0/0/0), Prereq: OTA-208, OTA-211; Arts & Sciences Elective Code: B

OTA-406 OT Methods III (3)
Presents information on the evaluation and treatment methods for work, leisure, psychosocial, cognitive and perceptual activities. Presents the fabrication of splints and use of orthotics. Technology and physical agent modalities are discussed. Credits: 3, Hours: (2/2/0/0), Prereq: OTA-306; Arts & Sciences Elective Code: B

OTA-409 Professional Development (2)
Includes the basic principles of management for the OTA. Topics include levels of authority and responsibility, supervisory process, performance appraisals, and policies and procedures. State and professional association regulations and legal/ethical issues are discussed. Reimbursement systems and their impact on health care are explored. Resume writing, interviewing and employability skills are covered. Credits: 2, Hours: (2/0/0/0), Prereq: OTA-850; Arts & Sciences Elective Code: B

OTA-410 Pediatric Interventions for the OTA (2)
Provides knowledge and skills for the assessment, treatment planning and treatment for the unique needs of the pediatric population. Credits: 2, Hours: (2/0/0/0), Prereq: OTA-309; Arts & Sciences Elective Code: B

OTA-411 Geriatric Interventions for the OTA (1.5)
Provides knowledge and skills for assessment and treatment of the geriatric population. Credits: 1.5, Hours: (1.5/0/0/0), Prereq: OTA-208, OTA-306, OTA-309; Arts & Sciences Elective Code: B

OTA-850 Occupational Therapy Assistant Fieldwork I-A (1)
Fieldwork and seminar experiences to provide opportunities to develop observational, interpersonal, and communication abilities. Experience includes involvement with disabled and non-disabled individuals. Credits: 1, Hours: (0.5/0/1.5/0), Prereq: OTA-208, OTA-211, OTA-212, OTA-306; Coreq: OTA-309; Arts & Sciences Elective Code: B; Comments: First, second semester OTA technical courses.

OTA-851 Occupational Therapy Assistant Fieldwork I-B (2.5)
Fieldwork and seminar experiences to provide opportunities to develop observational, interpersonal and communication skills. Experience includes involvement with disabled and nondisabled individuals. Credits: 2.5, Hours: (1.5/0/3/0), Prereq: OTA-850; Arts & Sciences Elective Code: B

OTA-852 Occupational Therapy Assistant Fieldwork II-A (6)
A supervised Level II fieldwork experience emphasizing physical dysfunction, psychosocial or specialty practices in occupational therapy. Provides experience developing the responsibilities expected of an entry-level occupational therapy assistant. Credits: 6, Hours: (0/0/18/0), Prereq: OTA-851; Coreq: OTA-205, OTA-409; Arts & Sciences Elective Code: B; Comments: All previous OTA technical courses.

OTA-854 Occupational Therapy Assistant Fieldwork II-B (6)
A supervised Level II fieldwork experience emphasizing physical dysfunction, dysfunction, psychosocial or specialty practices in occupational therapy. Provides experience developing the responsibilities expected of an entry-level occupational therapy assistant. Credits: 6, Hours: (0/0/18/0), Prereq: OTA-852; Coreq: OTA-409; Arts & Sciences Elective Code: B

OTA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PEA: Physical Education Activity

PEA-110 Badminton I (1)
Introduces the basic skills (forehand, backhand, service), strategy and rules of badminton. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-117 Bowling I (1)
Develops the basic skills necessary for a beginning bowler. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-134 Golf I (1)
Develops the basic skills necessary for a beginning golfer. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-136 Karate/Self Defense I (1)
Provides an introduction to karate and self-defense via basic attack and defense techniques, prearranged sparring, forms and developing an appropriate physical awareness and philosophical attitude. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-150 Powerwalking (1)
Introduces fitness walking and jogging as a lifetime endeavor to improve health and fitness. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-154 Racquetball I (1)
Introduces students to the rules, strategies and shots involved in the game. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-174 Tennis I (1)
Introduces the basic skills (forehand, backhand, service), strategy and rules of tennis. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-176 Volleyball I (1)
Instructs students in the basic rules and fundamentals of volleyball including on-court participa-

tion. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-187 Weight Training I (1)
Provides the student with the basics of weight conditioning, as well as a general workout opportunity. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-287 Weight Training II (1)
Provides further experiences in weight conditioning, such as circuit training and variation in the training regime. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A

PEA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PEA-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

PEC: Coaching Officiating

PEC-111 Techniques and Theory of Coaching (2)
Introduces the philosophical and ethical issues in athletic coaching. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-116 Athletic Development and Human Growth (2)
Assists students in understanding some of the basic concepts of sports psychology. Consists of improving human skill, enhancing group effort and understanding the reduction of stress. Encompasses some of the diverse topic areas important to both psychologists in general and those focused on athletic feats. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-125 Athletic Injury Prevention (2)
Introduces conditioning programs and training methods that tend to prevent athletic injuries. Provides basic skills in injury evaluation and acquaints the student with treatment procedures while providing practical experience in taping techniques. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-126 Athletic Injury Prevention (2)
Introduces conditioning programs and training methods that tend to prevent athletic injuries. Provides basic skills in injury evaluation and acquaints the student with treatment procedures while providing practical experience in taping techniques. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-140 Theory of Coaching Softball (2)
Studies the theory and practice of coaching softball. Emphasis on skill development and playing strategy with consideration given to rules and teaching pedagogy so that the game may be effectively coached. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-144 Theory of Coaching Baseball (2)
Introduces the coaching profession with specific emphasis on baseball fundamentals, strategy, organization, public relations and coaching psychology. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-148 Theory of Coaching Basketball (2)
Introduces the coaching profession with specific emphasis on basketball fundamentals, strategy, organization, public relations and coaching psychology. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-150 Theory of Coaching Volleyball (2)
Introduces the theory and practice of coaching volleyball. Emphasis on volleyball fundamentals, playing strategy, organization, public relations and coaching psychology. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-160 Sports Officiating (2)
Teaches the fundamentals, techniques, rules, procedures and professional attitudes required of officials in two major sports. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PEC-220 Techniques of Teaching Individual and Dual Sports (2)
Teaches the techniques required in a variety of sports, i.e. racquetball, tennis and golf, as well as teaching methodologies involved. Observation of physical education classes at the elementary, junior and senior high school level is an integral part of the course. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: A

PEC-221 Techniques of Teaching Team Sports (2)
Teaches the techniques required in a variety of sports, i.e. basketball, softball and volleyball, as well as teaching methodologies involved. Observation of physical education classes at the elementary, junior and senior school high level is an integral part of the course. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: A

PEC-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PEC-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

PEH: General Physical Education & Health

PEH-111 Personal Wellness (3)
Emphasizes the importance of personal responsibility in health and wellness. Focuses on personal decisionmaking in cardiovascular fitness, muscular fitness, nutrition and weight control, as well as aging and health. Improving and maintaining quality of life through health and healthy decisions is an ongoing theme throughout this course. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PEH-155 Exercise Psychology (3)
Provides an overview of the theories and practices related to engagement in physical activity. Emphasizes motivational theories of behavior and behavior changes as they relate to exercise and health behaviors. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PEH-162 Introduction to Physical Education (3)
An overview of the foundations, philosophies, history and principles of physical education. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PEH-191 Sports Nutrition (3)
Examines nutrition's effect on health and human performance, including the study of supplementation and specific diets. Focuses on the role of nutrition in disease prevention, special population activity and general performance enhancement. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-112 or BIO-151 or BIO-168 or BIO-180; Arts & Sciences Elective Code: A

PEH-210 Elementary Physical Education (3)
Introduces teaching methods and experience in elementary activities. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PEH-255 Principles of Sport Management (3)
Provides an overview of the theories and practices related to management and leadership in the fitness and sports industries. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PEH-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PEH-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

PEV: Intercollegiate Physical Education

PEV-115 Varsity Baseball (1)
Designed to give credit for knowledge and skills gained through varsity sports baseball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-121 Varsity Basketball, Men (1)
Designed to give credit for knowledge and skills gained through varsity sports basketball participation during an academic year. Credits: 1,

Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-122 Varsity Basketball, Women (1)
Designed to give credit for knowledge and skills gained through varsity sports basketball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-140 Varsity Golf (1)
Designed to give credit for knowledge and skills gained through varsity sports golf participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-160 Varsity Softball (1)
Designed to give credit for knowledge and skills gained through varsity sports softball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-170 Varsity Volleyball (1)
Designed to give credit for knowledge and skills gained through varsity sports volleyball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-215 Varsity Baseball II (1)
Designed to give credit for knowledge and skills gained through varsity sports baseball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-221 Varsity Basketball II, Men (1)
Designed to give credit for knowledge and skills gained through varsity sports basketball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-222 Varsity Basketball II, Women (1)
Designed to give credit for knowledge and skills gained through varsity sports basketball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-240 Varsity Golf II (1)
Designed to give credit for knowledge and skills gained through varsity sports golf participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-260 Varsity Softball II (1)
Designed to give credit for knowledge and skills gained through varsity sports softball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-270 Varsity Volleyball II (1)
Designed to give credit for knowledge and skills gained through varsity sports volleyball participation during an academic year. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Students may earn one credit per year for each varsity sport in which they participate. Students in multiple varsity sports may earn four credits total in Varsity sports participation courses.

PEV-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PEV-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising faculty member and dean

PHI: Philosophy

PHI-101 Introduction to Philosophy (3)
Investigates some of the fundamental issues in human existence - for example human nature, the nature of reality, the good life, how and what we know, the existence of God(s), justice and freedom, and free will and determinism - through readings and discussions of seminal philosophical texts in Western or non-Western traditions. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-105 Introduction to Ethics (3)
Investigates major issues and theories in Western or non-Western moral thought. The adequacies of ethical theories such as egoism, utilitarianism, virtue ethics, the ethics of care, and duty ethics are explored through discussions of topics such as those found in medicine, the media, the environment, social justice, education, gender relations, war, business and family life. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-111 Basic Reasoning (3)
Introduces both formal and informal aspects of reasoning and argument including principles of deductive reasoning, inductive reasoning, informal fallacies and critical thinking. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-125 Native American Philosophies (3)
Introduces some of the main philosophies of Native Americans. This course includes study of the histories and cultures of Native American groups with a focus on philosophical perspectives. This course examines metaphysics, epistomology, ethics, aesthetics, social philosophy and philosophy of nature of various Native American philosophical traditions, and those views will be contrasted with a variety of Western philosophical traditions. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-126 Chinese Philosophies (3)
Introduces some of the main philosophies of the Chinese tradition. This course includes study of the history and culture of China, especially the Classical Period, with a focus on philosophical perspectives. The majority of time will be spent studying classical Chinese Confucianism, Taoism, Mohism and Legalism, with some emphasis on Chinese Buddhism and Neo-Confucianism. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-130 Philosophy of Human Nature (3)
Investigates some important theories of human nature through discussions of such issues as the mind-body problem, the nature of freedom, social contracts, the roles of nature and nurture, the meaning of life, and happiness. Though the course will consider mainly philosophical texts, it may also include material from disciplines such as biology, literature, psychology and anthropology. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-132 Philosophy of Education (3)
Investigates the nature and purposes of education and the major issues and theories in the philosophy of education. The educational philosophy of thinkers from Plato and Aristotle to Hobbes and Rousseau to Whitehead, Dewey, Fraire, Hooks, Palmer and Gutman are examined by exploring issues such as democracy and education, models of teaching and learning, testing and assessment, implications of development theories, children's rights, equity issues, and multiculturalism. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-150 Social & Political Philosophy (3)
Examines theories of society and the political state, such as paternalism, absolutism, theocracy, democracy, conservativism, liberalism, social-

ism, feminism and pluralism. Explores public values, such as justice, liberty and equality, as they apply to issues of state power, political obligation, property and class, race, ethnicity, gender/sexuality and the environment. Credits: 3, Hours: (3/0/0/0), Prereq: PHI-101, PHI-105, PHI-111 or PHI-130; Arts & Sciences Elective Code: A

PHI-160 Environmental Ethics (3)
Examines contemporary environmental issues in light of traditional and contemporary ethical thought. Explores concerns such as species extinction, global climate change, ecosystemic degradation, animal rights, and unequal effects of environmental harm on humans. Ethical perspectives include duty ethics, utilitarianism, ethics of care, virtue ethics, deep ecology, ecological feminism, the land ethic, and social ecology. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHI-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PHI-928 Independent Study (1-3)
Provides readings, papers, study and/or research under the guidance of a faculty member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

PHR: Pharmacy Tech

PHR-118 Pharmacy Technician (5)
Provides the knowledge and skills necessary for employment as a pharmacy technician in a retail or hospital pharmacy under the direct supervision of a pharmacist. Structured to prepare learners for the National Pharmacy Technician Certification Exam. Includes basic understanding of medications, prescriptions and terminology, record keeping, ethics and jurisprudence, as well as the role of the pharmacy technician. The program consists of 75 hours of classroom work comprised of lecture, tests, and hands-on practice. Students also complete preceptorships of eight hours in a retail pharmacy and eight hours in a hospital pharmacy. Credits: 5, Hours: (4.5/1/0/0), Arts & Sciences Elective Code: B

PHR-170 Pharmacology Technology (7.5)
Provides the knowledge and skills necessary for employment as a pharmacy technician, in a retail, hospital or clinic pharmacy, under the direct supervision of a pharmacist. Includes basic understanding of medications, prescriptions and terminology, pharmaceutical calculations and techniques, record keeping, ethics and jurisprudence, as well as the role of the pharmacy technician. Emphasizes student preparation to make informed, intelligent decisions and assisting the pharmacist with providing medication and other types of health care products to patients. Designed to prepare learners for the National Pharmacy Technician Certification Exam. Credits: 7.5, Hours: (6/1/3/0), Prereq: MAT-102; Arts & Sciences Elective Code: B; Comments: Consists of 96 hours of classroom work, 16 hours of hands-on lab practice and 48 hours of preceptorships in both retail and hospital pharmacies. Requires proficiency in fractions, decimals, percents, proportions, conversions and one-variable f

PHR-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PHR-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

PHS: Physical Science

PHS-151 Introduction to Astronomy (3)
Centers around a variety of topics including the universe and the earth in space, properties of stars, nuclear energy sources, the solar system, quasars, black holes and life in the universe. Laboratories and observations are incorporated. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: A

PHS-170 Physical Geology (3)
Presents basic concepts in geology, i.e. earth materials and processes, historical geology and geological resources. Constructive and destructive forces involved in shaping the planet are discussed. Plate tectonics and sea-floor spreading serve as a unifying factor for the course. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Either Physical Geology (PHS-170) or Environmental Geology (PHS-175) will satisfy three hours of science core requirements. However, both cannot be counted toward meeting core. If both courses are taken, the second will count as an elective.

PHS-171 Physical Geology Lab (1)
Designed to be taken with PHS-170. Credits: 1, Hours: (0/2/0/0), Coreq: PHS-170; Arts & Sciences Elective Code: A

PHS-175 Environmental Geology (3)
Examines the effects of geological processes and geohazards on human life and activities. Course also concentrates specifically on those geological factors that are key components of modern problems of pollution, waste disposal, construction, economics, etc. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A; Comments: Either Physical Geology (PHS-170) or Environmental Geology (PHS-175) will satisfy three hours of science core requirements. However, both cannot be counted toward meeting core. If both courses are taken, the second will count as an elective.

PHS-176 Environmental Geology Laboratory (1)
Designed to be taken with PHS-175 Credits: 1, Hours: (0/2/0/0), Coreq: PHS-175; Arts & Sciences Elective Code: A

PHS-180 Evolution of the Earth (3)
Considers interdisciplinary principles, techniques and methods essential to the interpretation of the geological history of the earth. The development of plate tectonics and continental drift through geological time and the progression and evolution of life from Pre-Cambrian time to present time are also examined. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PHS-181 Evolution of the Earth Lab (1)
Designed to be taken with PHS-180. Credits: 1, Hours: (0/2/0/0), Coreq: PHS-180; Arts & Sciences Elective Code: A

PHS-924 Honors Project (1)
Allows qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

PHS-928 Independent Study (1)
Provides readings, papers, field or basic research projects for independent work in the geological sciences. Students study under the individual guidance of a staff member. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

PHY: Physics

PHY-120 Introductory Physics (3)
Provides basic work with scientific reasoning and fundamental concepts in classical and modern physics. Lab provides opportunities for measurements and application of concepts. Recommended for students planning to take College or Classical Physics, as well as all liberal arts students desiring an introductory course. Credits: 3, Hours: (2/2/0/0), Prereq: MAT-062; Arts & Sciences Elective Code: A

PHY-162 College Physics I (4)
Emphasizes introductory physics concepts and methods of scientific reasoning. The first semester of this sequence treats the structure and properties of matter, descriptions of motion, Newton's Laws, conservation laws, rotational motion, fluid statics, fluid dynamics and thermodynamics. Designed primarily for students interested in Pre-Medical, Pre-Dental, Pre-Pharmacy, Pre-Forestry or Pre-Teacher education programs and those who seek to meet science requirements in their professional programs. Credits: 4, Hours: (3/2/0/0), Prereq: MAT-102; Arts & Sciences Elective Code: A

PHY-172 College Physics II (4)
Continues College Physics I and includes static and current electricity, electromagnetism, wave motion, optics, atomic and nuclear physics. Applications to the life sciences are integrated with material throughout the semester. Credits: 4, Hours: (3/2/0/0), Prereq: PHY-162; Arts & Sciences Elective Code: A

PHY-180 Applied Physics I (2)
Studies Mollier diagrams, psychrometric charts, thermodynamics and gas laws. Demonstrates how these properties of physics apply to the refrigeration cycle, heating, cooling, humidification and dehumidification. Credits: 2, Hours:

(1/2/0/0), Prereq: MAT-109; Arts & Sciences Elective Code: B

PHY-182 Applied Physics II (3)
Studies mechanical power transmission, energy convertors, fluid power and precision measuring instruments, measurement conversion, air and fluid flow characteristics. Credits: 3, Hours: (2/2/0/0), Prereq: PHY-180; Arts & Sciences Elective Code: B

PHY-190 Physics I (3)
Covers physical concepts needed to understand and practice mechanical engineering. Includes measurement and vectors, statics equilibrium, torque, uniformly accelerated motion, Newton's laws, friction, work, energy and power, and simple machines. Emphasizes problem solving and teamwork through weekly labs focused on data collection using PC-based data acquisition equipment. Credits: 3, Hours: (2/2/0/0), Prereq: MAT-745; Arts & Sciences Elective Code: B

PHY-192 Physics II (3)
Includes impulse/momentum, rotational motion, dynamics of rotation, fluids, properties of materials and simple harmonic motion, temperature, matter and heat energy, and introductory thermodynamics. Emphasizes problem solving and teamwork through weekly labs focused on data collection using PC-based data acquisition equipment. Credits: 3, Hours: (2/2/0/0), Prereq: PHY-190; Arts & Sciences Elective Code: B

PHY-212 Classical Physics I (5)
Introduces physics using calculus-level mathematics. Designed for students in Engineering, Mathematics and Physics. The first semester of this sequence covers the topics of vectors, linear and rotational kinematics, statics, dynamics, and oscillatory and wave motion. Credits: 5, Hours: (4/2/0/0), Prereq: MAT-210; Arts & Sciences Elective Code: A

PHY-222 Classical Physics II (5)
Continues Classical Physics I. Includes the topics of thermodynamics, static and current electricity, electromagnetism, geometric and wave optics, and a brief introduction to modern physics. Credits: 5, Hours: (4/2/0/0), Prereq: MAT-216, PHY-212; Arts & Sciences Elective Code: A

PHY-230 Technical Physics I (3)
Studies the technical applications of motion, force, momentum, statics, work, rotation and simple machines. Emphasizes concepts through laboratory and lecture. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

PHY-232 Technical Physics II (3)
Studies the technical applications of matter, fluids, heat transfer, gas properties, sound, light and modern physics. Emphasizes concepts through laboratory and lecture. Credits: 3, Hours: (2/2/0/0), Prereq: PHY-230; Arts & Sciences Elective Code: B

PHY-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PHY-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (0/2/0/0), Prereq: PHY-120 or PHY-162 or PHY-172; Arts & Sciences Elective Code: A; Comments: Permission of instructor and dean

PLU: Plumbing

PLU-130 Plumbing Theory I (6)
Provides instruction on the basic principles of plumbing system installations. At the conclusion of the course, the student will be able to complete a variety of plumbing-related tasks such as identify and describe safe work practices; identify and explain the materials, fittings and supports used in a plumbing installation; identify the Uniform Plumbing Code; identify the content covered in each chapter of the UPC and perform basic pipe sizing; create plan and elevation plumbing drawings and sketches; and identify and describe potable water systems, water wells and basic water treatment. Credits: 6, Hours: (4/4/0/0), Arts & Sciences Elective Code: B

PLU-132 Plumbing Theory II (8)
Provides instruction in all aspects of plumbing installations in a residential setting. Students learn to plan, design and install a plumbing drain, a waste and vent system, plumbing fixtures, water distribution systems, natural gas supply piping, venting, and chimney systems in accordance with the Uniform Plumbing Code, state and local amendments. Credits: 8, Hours: (6/4/0/0), Prereq: PLU-130; Arts & Sciences Elective Code: B

PLU-140 Plumbing Practices I (4)
Provides instruction on common pipe joining techniques and common pipe fitting procedures for pressure and drainage weight pipe and fittings. At the completion of the course, the student will be able to identify the common materials used in plumbing and gas piping systems, identify and perform common joining methods used on piping materials, and maintain a job log of time spent and materials used for each of the piping assignments. Credits: 4, Hours: (0/8/0/0), Arts & Sciences Elective Code: B

PLU-142 Plumbing Practices II (4)
Provides instruction for installation of plumbing systems. At the completion of the course, the student will be able to plan, design and install a plumbing drain, a waste and vent system, plumbing fixtures, water distribution systems, natural gas supply piping, venting, and chimney systems in accordance with the Uniform Plumbing Code, state and local amendments. Credits: 4, Hours: (1/6/0/0), Prereq: PLU-140; Arts & Sciences Elective Code: B

PLU-150 Advanced Plan and Print Reading (2)
Provides instruction on reading, interpreting and understanding standard construction drawings. From a given construction drawing, students develop piping sketches including plan, elevation and isometric views, size drain waste and vent piping by use of the Uniform Plumbing Code and the City of Cedar Rapids amendments, prepare a materials list from a given piping sketch and download and print a variety of manufacturers' product information sheets for fixtures, faucets, fittings and other related items. Credits: 2, Hours: (1/2/0/0), Prereq: HCR-710; Arts & Sciences Elective Code: B

PLU-160 Plumbing for Maintenance Trades (3)
Covers plumbing and shop safety, plumbing and pipefitting theory, plan and print reading, plumbing code, basic pipe sizing, and identification and use of various piping materials. Emphasizes plumbing installation, joining methods and repair methods in accordance with Uniform Plumbing Code, along with local and state amendments, in a hands-on lab setting. Credits: 3, Hours: (2/2/0/0), Prereq: MAT-109; Arts & Sciences Elective Code: B

PLU-932 Internship (1-2)
Focuses on providing the student practical experience in a plumbing related work environment. Includes employer/supervisor evaluations and instructor visits/interview. Credits: 1-2, Hours: (0/0/0/4-8), Arts & Sciences Elective Code: B

PNN: Practical Nursing

PNN-104 Metrology (1)
Utilizes the ratio and proportion method for conversion between measurement systems and dosage calculation. Includes calculation of intake and output and learning the abbreviations related to administration of medications. Credits: 1, Hours: (1/0/0/0), Coreq: PNN-138, PNN-139; Arts & Sciences Elective Code: B

PNN-128 Foundations of Nursing I (5.25)
Introduces nursing and patient care concepts, including the theoretical foundation for basic assessment and application of the nursing process. Emphasizes patient care with alterations in selected disease states. Lab opportunities reinforce concepts. Credits: 5.25, Hours: (4.5/1.5/0/0), Prereq: BIO-151, HSC-157 and HSC-169, and either BIO-168 & BIO-173 or BIO-177 & BIO-180; Arts & Sciences Elective Code: B

PNN-129 Foundations of Nursing II (3.75)
Focuses on care of adult patients with health alterations that require medical and/or surgical intervention. Applies the nursing process as a decision-making framework to assist students in developing effective clinical judgment skills. Integrates pathophysiology, pharmacology and nutrition in the selected disease states. Credits: 3.75, Hours: (3.25/1/0/0), Prereq: PNN-128, PNN-207, PNN-701; Arts & Sciences Elective Code: B

PNN-138 Introduction to Nursing (2)
Provides the basic concepts related to nursing, such as adaptation, basic nutrition, communication, nursing roles, teaching/learning and health. Students learn the nursing process and issues related to nursing practice on an introductory level. Credits: 2, Hours: (2/0/0/0), Prereq: BCA-189, BIO-168, BIO-173, HSC-107, HSC-135; Coreq: PNN-104, PNN-139, PNN-722; Arts & Sciences Elective Code: B

PNN-139 Practical Nursing I (5)
Introduces the role of provider of care for the adult client with an emphasis on chronic illnesses, including gerontological issues. The areas of pathophysiology, nutrition and pharmacology are integrated relative to the client problems. Basic nursing skills are practiced in a supervised lab setting. Credits: 5, Hours: (4.5/1/0/0), Prereq: BCA-189, BIO-168, BIO-173, HSC-107, HSC-135; Coreq: PNN-104, PNN-138, PNN-722; Arts & Sciences Elective Code: B

PNN-207 Introduction to Pharmacology (3)
Provides an introduction to the principles of pharmacology, including pharmacokinetics, pharmacodynamics, medication interactions and adverse side effects. Emphasis is placed on drug classifications, nursing responsibilities and safe administration across the life span. Concepts for dosage calculations are introduced. Credits: 3, Hours: (3/0/0/0), Prereq: BIO-151, HSC-157 and HSC-169, and either BIO-168 & BIO-173 or BIO-177 & BIO-180; Arts & Sciences Elective Code: B

PNN-436 Nursing Care of the Growing Family (3.25)
Presents concepts related to nursing care of women and families during the reproductive years. Focuses on the childbearing process, and women's health and wellness. Discusses care of the well and hospitalized child and family. Lab experience includes a community based setting. Credits: 3.25, Hours: (3/.5/0/0), Prereq: PNN-128, PNN-207, PNN-701; Arts & Sciences Elective Code: B

PNN-533 Practical Nursing II (6)
Presents concepts related to maternal/child health including pediatrics and obstetrics. Medical/surgical and mental health illnesses throughout the lifespan are studied. Principles of growth and development are applied. The areas of pathophysiology, pharmacology and nutrition are integrated relative to the client problems. Basic nursing skills are practiced in a supervised laboratory setting. Credits: 6, Hours: (4.5/3/0/0), Prereq: PNN-104, PNN-138, PNN-139, PNN-722; Coreq: PNN-732; Arts & Sciences Elective Code: B

PNN-640 Practical Nursing Capstone (2)
Provides nursing students the knowledge and skills necessary to effectively lead and manage others in the health care system; and to competently care for the older adult and patients with mental illnesses. Emphasizes leadership and management concepts, as well as developing delegation, supervision, conflict management, performance appraisal and staff education skills. Includes effective care, assessment, evaluation and maintenance of best practices for the elderly and patients with mental health illness. Credits: 2, Hours: (2/0/0/0), Prereq: PNN-129, PNN-702, PNN-436; Arts & Sciences Elective Code: B

PNN-701 Foundations of Nursing Clinic I (1.5)
Introduces the application of nursing care concepts in a clinical setting. Provides a decision-making framework in developing effective clinical judgment skills. Applies basic assessment and patient care concepts, including patient centered care, cultural sensitivity, informatics, safe practice and professionalism. Credits: 1.5, Hours: (0/0/4.5/0), Prereq: BIO-151, HSC-157 and HSC-169, and either BIO-168 & BIO-173 or BIO-177 & BIO-180; Arts & Sciences Elective Code: B

PNN-702 Foundations of Nursing Clinic II (1.5)
Provides the opportunity to advance knowledge in the application of the patient care concepts in the clinical setting. Includes integration of pathophysiology, nutrition and pharmacology, as well as the application of the nursing process, refining basic assessment skills, patient-centered care, cultural sensitivity, informatics, safe practice and professionalism. Credits: 1.5, Hours: (0/0/4.5/0), Prereq: PNN-128, PNN-701, PNN-702; Arts & Sciences Elective Code: B

PNN-722 Fundamentals of Nursing Clinical (2)
Focuses on the application of knowledge, psychomotor and affective skills to perform the role of provider of care. Emphasis is on making basic observations and performing nursing cares associated with activities of daily living in long-term care and medical settings. Concepts related to nutrition, pharmacology and pathophysiology are applied. Taken concurrently with Practical Nursing I, Intro to Nursing, and Metrology. Credits: 2, Hours: (0/0/6/0), Prereq: BCA-189, BIO-168, BIO-173, HSC-107, HSC-135; Coreq: PNN-138; Arts & Sciences Elective Code: B

PNN-732 Practical Nursing Clinical II (3)
Focuses on the application of knowledge, psychomotor and affective skills to perform the role of provider of care through observation and implementation of nursing care in various settings. Concepts related to nutrition, pharmacology and pathophysiology are applied. Credits: 3, Hours: (0/0/9/0), Prereq: PNN-104, PNN-138, PNN-139, PNN-722; Coreq: PNN-533; Arts & Sciences Elective Code: B

PNN-810 Practical Nursing Leadership Clinic (1)
Emphasizes the use of the nursing process as a framework to provide care and perform focused assessments of patients in a clinical setting. Encourages students to apply knowledge, psychomotor and affective skills to effectively care for older adults in long-term care settings. Requires use of evidence-based practice to evaluate and revise individualized care plans. Credits: 1, Hours: (0/0/3/0), Prereq: PNN-129, PNN-436, PNN-702; Coreq: PNN-640; Arts & Sciences Elective Code: B

PNN-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

POL: Political Sicence

POL-111 American National Government (3)
Studies American policy based on a close examination of the processes of decision making. Emphasis is placed on voting behavior and citizen interaction within the system. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

POL-121 International Relations (3)
Analyzes governments in the more developed countries (MDCs) and in the less developed countries (LDCs) and the interaction of these governments in their political, economic and security dimensions. Also analyzes the sources of policy and their theoretical foundations. Problems are examined through current world concerns. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

POL-125 Comparative Government and Politics (3)
Studies the systems of government of several countries taking into consideration citizen participation and policy-making processes. Includes basic theories, methods and concepts of comparative study. Examines similarities and differences of political structures including political parties and executive and legislative institutions. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

POL-130 Perspectives on Terrorism (1)
Introduces the student to the concept of terrorism, methods of preparing for a terrorist attack, and the psychological impact of terrorism. Students examine the historical origins of terrorism, ways to prepare and respond, and the psychological impact of terrorism on society. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

POL-150 Introduction to U. S. Foreign Policy (3)
Studies institutions and processes which structure and shape United States foreign policymaking. Surveys historical, military, diplomatic and economic interactions with countries and international governmental and non-governmental organizations. Examines issues such as terrorism, trade, human rights, espionage, intelligence and homeland security. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

POL-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires completion of an Honors Project Learning Contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

POL-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

PRL: Paralegal

PRL-101 Paralegal Studies Orientation (3)
Provides an overview of the American legal system and the practice of law. Introduces students to legal processes; court systems; courses of law; basic legal research methods; and to the nature, ethics and regulation of legal professions. Introduces the substantive law and skill areas students will encounter in subsequent legal assistant courses. Examines the relationship between different kinds of legal systems and between social science and law. Credits: 3, Hours: (3/0/0/0), Prereq: ENG-101; Arts & Sciences Elective Code: A

PRL-105 Legal Ethics (1)
Studies the canons of professional ethics and disciplinary rules applicable to lawyers and legal

assistants, together with applicable disciplinary proceedings and court decisions. Credits: 1, Hours: (1/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-110 Fundamentals of Legal Research and Writing (2)
Provides instruction in law library and computer technology resources needed for law applicable to solving legal problems, including research strategies, analysis and application of law, and communicating research results orally and in written legal memoranda. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-111 Advanced Legal Research and Writing (2)
Provides instruction in using computer-based legal research methods to address complex legal research problems and in utilizing research results in appellate briefs and other advocacy legal documents. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101, PRL-110; Arts & Sciences Elective Code: A

PRL-120 Investigation for Paralegals (2)
Provides an overview of the fact-gathering process for paralegals, including principles and techniques of investigation, sources of public and private information, methods for preserving information, and analyzing the probativeness, sufficiency, and admissibility of facts for trial. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101, PRL-110; Arts & Sciences Elective Code: A

PRL-130 Torts (2)
Provides instruction on the principles of tort law, emphasizing skills in reading and interpreting primary and secondary sources of law. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-136 Bankruptcy Law (2)
Teaches the Bankruptcy Act, applicable rules and selected case law and their application to the preparation of a bankruptcy filing. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-140 Business Organization Law (2)
Explores and explains the legal characteristics of proprietorships, corporations, partnerships and other business vehicles, and teaches drafting of articles of incorporation, by-laws, partnership agreements and related business documents. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-145 Secured Transactions (2)
Covers secured transactions in the UCC and introduces negotiable instruments. Presents the Article rules and enables students to understand situations in which security interests are used and enforced. Students use the Secretary of State Web site. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-150 Real Estate Law (2)
Studies the law of real property and surveys the more common types of real estate transactions and conveyances such as deeds, contracts, leases, deeds of trust and studies recording systems and public documents. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-160 Family Law (2)
Provides a study of laws of marriage, divorce, child custody and support, separations, annulments, paternity, adoptions and mental health commitment procedures, and tax aspects of divorce and separation. The emphasis of the course is on the procedural and practical aspects of the laws. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-165 Estate Planning/Administration (2)
Provides a working knowledge of lifetime and testamentary estate planning enabling the student to draft trusts and wills, and to compute tax consequences. Provides understanding of the process of settling estates both within and outside probate court. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-170 Administrative Law (2)
Provides a working knowledge of administrative law and procedure, and the practical skills necessary for advocacy before an administrative agency. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-175 Contracts (2)
Provides instruction in the principles of contract law, emphasizing skills in reading and interpreting primary and secondary sources and practicing preparation of contracts. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-176 Civil Litigation (3)
Teaches the rules, processes and paralegal skills for preparing cases for civil trials, including the preparation of complaints, discovery and motions. Credits: 3, Hours: (3/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-180 Employment Law Topics (2)
Surveys selected legal aspects of the employer-employee relationship, such as federal labor laws, civil rights laws, Americans With Disabilities Act, privacy and harassment laws, and human resource management issues. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-181 Workers' Compensation (2)
Teaches the law and procedures, and the paralegal's role involved in representation of claimants for workers' compensation benefits. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PRL-185 Immigration Law (2)
Introduces basic constitutional provisions and United States Supreme Court cases that led to current immigration policy. Emphasizes immigrant and non-immigrant visas, student and work visas, and long-term nonresidents and individuals on the path to naturalization. Explores common immigration law situations and problems. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

PRL-189 Criminal Law and Procedure for the Paralegal (2)
Provides an overview of the basic principles of criminal law, as derived from common law, statutory and Constitutional principles, as well as basic criminal procedure in the United States. Contains additional instruction on the Iowa Rules of Criminal Procedure, highlighting differences between Iowa and other jurisdictions. Explores the rules, processes and skills necessary to prepare criminal cases for trial. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-195 Environmental Law (2)
Surveys state and federal law related to protection of the environment. Covers knowledge, skills and duties likely to be required of paralegals practicing in this area. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PRL-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PRL-928 Independent Study (1)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

PRL-932 Internship (3)
Provides an opportunity to use and refine paralegal skills in a work setting with the guidance of legal professionals. Students attend monthly seminars throughout the internship semester to share and gain perspective on their experiences. Credits: 3, Hours: (0/0/9/0), Arts & Sciences Elective Code: A; Comments: Completion of all law courses; permission of instructor.

PRL-945 Selected Topics (2)
Teaches principles, practice and applications in an area of law of current interest to paralegals. Credits: 2, Hours: (2/0/0/0), Prereq: PRL-101; Arts & Sciences Elective Code: A

PSY: Psychology

PSY-111 Introduction to Psychology (3)
Introduces the scientific study of mental processes and behavior with emphasis on the nervous system, learning and memory, cognition, sensation and perception, motivation and emotion, personality, intelligence, stress, psychological disorders and therapy, and social influence. Stresses roles of both theory and empirical evidence in describing, explaining and predicting behavior. Encourages critical thinking about research methods and ethics. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PSY-121 Developmental Psychology (3)
Introduces physical, cognitive and psychosocial development from a lifespan perspective covering conception until death. Provides an introduction to major theories and classic and contemporary research, and examines normative development as impacted by genes, maturation, experience, cohort, gender, race, social class and culture. Discusses topics including developmental research methods; genetics; prenatal

development; infancy; childhood; adolescence; early, middle and late adulthood; and death and bereavement. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111; Arts & Sciences Elective Code: A

PSY-241 Abnormal Psychology (3)
Describes emotional, cognitive and behavioral disorders using the current edition of the DSM for classification and diagnosis of disorders. Explores assessment, causes and treatments of disorders from a biopsychosocial perspective. Reviews historical and current theoretical perspectives of abnormality, research methods, and legal and ethical issues. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111; Arts & Sciences Elective Code: A

PSY-251 Social Psychology (3)
Explores how an individual's thinking, feelings and behavior are affected by others. Covers research methods, ethics, and classic as well as contemporary research on topics including social beliefs and judgments, self and person perception, attitude formation and change, prejudice, aggression and conflict, helping and prosocial behavior, interpersonal attraction, gender-related behavior, conformity and deviation, persuasion, and group influence. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111; Arts & Sciences Elective Code: A

PSY-261 Human Sexuality (3)
Expands upon psychological, cultural, biological, legal and political aspects of human sexuality. Examines research and multiple data sources. Explores topics of media, gender and sexual orientation, sexual anatomy and response, sexual expression and variation, birth control, conception, pregnancy and childbirth, sexual dysfunction and therapy, health and illness, sexually transmitted infections and treatment, sexual coercion, pornography, and prostitution. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

PSY-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contact. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PTA: Physical Therapist Assistant

PTA-101 Introduction to PTA (2)
Overviews the physical therapy profession, the education and eventual role of the PTA, and the national organization APTA. Explores emotional reactions to disability and considers communication strategies for patients, family members and other health care workers. Discusses the patient care process and treatment of diverse populations. Includes concepts of self and peer assessment, and goal setting. Students attend three mandatory face-to-face sessions with the remainder of the course material covered online. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

PTA-110 Fundamentals for PTA (3)
Introduces patient care activities for the PTA, including positioning and draping, posture and body mechanics. Covers pre-ambulation activities, including exercise and functional activities, fitting of assistive devices, gait training, and negotiation of architectural barriers. Includes a 32-hour off-campus clinical experience. Credits: 3, Hours: (2/2/0/0), Prereq: Minimum C grade in both PTA-120 & PTA-140; Coreq: BIO-168; Arts & Sciences Elective Code: B

PTA-120 Kinesiology (3)
Provides a basic understanding of normal human body movement as related to skeletal, articular, neurological and muscular systems. Addresses movement of arm, levers, torque, center of gravity and base of support as they relate to balance. Covers anatomical palpation, normal posture and gait. Credits: 3, Hours: (2/2/0/0), Coreq: BIO-168, PTA-192; Arts & Sciences Elective Code: B

PTA-140 Functional Motor Development (3)
Presents normal human development as it relates to movement and functional independence. Covers lifetime development of each body system, and the functional implications of changes in these body systems. Discusses the psychosocial issues typical at each stage of the lifespan and useful teaching strategies for physical therapy interventions. Includes a 15-hour off-campus service learning experience. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

PTA-150 Pathophysiology (3)
Presents clinical disorders and diseases commonly treated in physical therapy. Covers pathology, etiology, diagnosis, signs, symptoms and prognosis. Credits: 3, Hours: (3/0/0/0), Prereq: Minimum C grade in PTA-120; Coreq: BIO-173; Arts & Sciences Elective Code: B

PTA-160 PTA Procedures I (3)
Introduces assessment skills and exercise procedures performed by the PTA. Covers theory and application of goniometry, manual muscle testing, palpation and various other assessment techniques with a focus on the upper extremities. Explores basic exercise procedures as they relate to the results of the assessment procedures. Includes laboratory demonstration and practice of each skill. Credits: 3, Hours: (2/2/0/0), Prereq: BIO-168, BIO-173, PTA-110, PTA-120, PTA-150, PTA-161, PTA-192, PTA-193; Arts & Sciences Elective Code: B

PTA-161 PTA Procedures II (3)
Introduces assessment skills and exercise procedures performed by the PTA. Covers theory and application of goniometry, manual muscle testing, palpation and various other assessment techniques with focus on the lower extremities. Explores basic exercise procedures as they relate to the results of the assessment procedures. Includes laboratory demonstration and practice of each skill. Credits: 3, Hours: (2/2/0/0), Prereq: BIO-168, BIO-173, PTA-110, PTA-120, PTA-150, PTA-160, PTA-192, PTA-193; Arts & Sciences Elective Code: B

PTA-192 PTA Modalities I (2)
Prepares the student to use modalities for patient/client management. Presents the science of modalities along with mechanisms of action, physiological processes, indications and contraindications for each modality. Covers patient preparation and assessment, the healing process, pain assessment, superficial and deep heat, cold, intermittent compression pumps/edema management strategies, therapeutic massage, and spinal traction. Includes physiological mechanisms, indications, contraindications, precautions as well as application techniques for each modality. Credits: 2, Hours: (1/2/0/0), Coreq: BIO-168, PTA-120; Arts & Sciences Elective Code: B

PTA-193 PTA Modalities II (3)
Continues study of modalities used for patient/client management. Discusses mechanisms of pain management and incorporates them into patient interventions. Covers ultrasound, diathermy, biofeedback, electrical stimulation (pain, edema, wound care and muscle dysfunction), wound care techniques and hydrotherapy. Includes physiological mechanisms, indications, contraindications, precautions as well as application techniques for each modality. Credits: 3, Hours: (2/2/0/0), Prereq: Minimum C grade in PTA-192; Coreq: BIO-173; Arts & Sciences Elective Code: B

PTA-210 Orthopedics (3)
Provides a review of normal skeletal anatomy. Discusses body joints as they relate to stability, appropriate motion and reasons for dysfunctions. Presents treatment regime options for basic orthopedic surgeries, injuries and dysfunction. Credits: 3, Hours: (2/2/0/0), Prereq: PTA-301; Arts & Sciences Elective Code: B

PTA-230 Rehab for Medical Conditions (3)
Provides application of patient management skills to a variety of general medical conditions. Covers therapeutic exercise directed to specific impairments, as well as special considerations for a variety of diagnoses. Addresses clinical problem solving, patient progression and patient and family education. Credits: 3, Hours: (2/2/0/0), Prereq: PTA-301; Arts & Sciences Elective Code: B

PTA-240 Neurology (3)
Provides an overview of the human nervous system in regards to anatomy, neurodevelopment, and function. Discusses clinical neuropathologies, therapeutic analysis and program planning. Includes pediatric considerations as well as treatment of adult neurological diagnoses. Covers exercise theories including PNF, NDT, Brunnstrom, and motor learning. Credits: 3, Hours: (2/2/0/0), Prereq: PTA-301; Arts & Sciences Elective Code: B

PTA-250 PTA Career Essentials (2)
Discusses basic career principles, including levels of authority and responsibility, supervision, performance appraisals, policies and procedures and ethical and legal guidelines. Includes a review of rules and regulations governing PTA practice in Iowa, and the licensure application and preparation process. Discusses the process of quality assurance, chart audits, varieties of reimbursement systems and their impact on health care delivery. Covers resume writing, interviewing and employment skills, as well as self and peer assessment as a tool for career development and lifelong learning. Students attend two mandatory face-to-face sessions with the remainder of the course material covered online. Credits: 2, Hours: (2/0/0/0), Prereq: PTA-210, PTA-230, PTA-240, PTA-301, PTA-302; Coreq: PTA-431; Arts & Sciences Elective Code: B; Comments: Involves a

component of independent study as well as classroom activities

PTA-301 PTA Clinic I (2)
Includes application of new concepts and skills learned in previous PTA course work to hands-on patient care in selected clinical settings. Includes classroom component reviewing concepts of supervision requirements, ethics and legal guidelines, reimbursement and communication as it relates to clinical practice. Credits: 2, Hours: (.5/0/4.5/0), Prereq: BIO-168, BIO-173, PTA-110, PTA-120, PTA-150, PTA-192, PTA-193; Coreq: PTA-160, PTA-161; Arts & Sciences Elective Code: B

PTA-302 PTA Clinic II (2)
Includes application of new concepts and skills learned in previous PTA coursework to direct patient care in selected clinical settings. Includes classroom component reviewing concepts of supervision requirements, ethics and legal guidelines, reimbursement and communication as it relates to clinical practice. Credits: 2, Hours: (.5/0/4.5/0), Prereq: PTA-301; Arts & Sciences Elective Code: B

PTA-431 PTA Clinic III (12)
Applies and develops proficiency in all previous concepts and skills through direct patient care in a full time clinical experience. Credits: 12, Hours: (0/0/36/0), Prereq: PTA-210, PTA-230, PTA-240, PTA-301, PTA-302; Coreq: PTA-250; Arts & Sciences Elective Code: B

PTA-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

PWL: Powerline

PWL-300 Smart Grid Design and Technology (1)
Provides a comprehensive understanding of the emerging Smart Grid "Intelligent Power System" integration to wind, sun and steam power generation. Covers energy storage, advanced power electronics at the T&D distribution levels, networked control systems, automation, system optimization and real-time control. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

PWL-325 Electrical Distribution Systems (1)
Encourages understanding and application of overhead and underground three-phase electrical distribution system principles, applications and components. Covers selection of proper conductors, cables and transformers and the importance of distribution system protection, insulation, coordination and overvoltage protection. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

PWL-330 Power Cable Materials and Installation (1)
Covers the design, selection and installation of conductors, insulators, shields and jackets. Emphasizes splicing and terminating standards and practices. Studies cable condition assessment, reliability, ampacity and surge protection. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

RCP: Respiratory Therapy

RCP-120 Cardiopulmonary Assessment (1)
Provides the student with the necessary competencies to conduct a general head-to-toe integumentary assessment as well as a more detailed cardiovascular and chest/pulmonary assessment, enabling the student to identify and document any abnormalities. Credits: 1, Hours: (0.5/1/0/0), Coreq: BIO-161; Arts & Sciences Elective Code: B

RCP-210 Introduction to Respiratory Care (2.5)
Provides the theory, equipment operation and application with laboratory exercises in airway management techniques, humidity therapy and bland aerosol therapy. Credits: 2.5, Hours: (1.5/2/0/0), Coreq: BIO-161, MAT-732; Arts & Sciences Elective Code: B

RCP-220 Respiratory Care I (3)
Provides the theory, equipment operation and application with laboratory exercises in oxygen and other gas therapy; and aerosol drug therapy, with an introduction to respiratory pharmacology and airway clearance modalities. Credits: 3, Hours: (2/2/0/0), Prereq: HSC-107, HSC-210, RCP-210; Arts & Sciences Elective Code: B

RCP-300 Respiratory Physiology (4)
Provides the essential concepts of cardiopulmonary anatomy and physiology with an emphasis on pulmonary homeostasis. Credits: 4, Hours: (4/0/0/0), Prereq: BIO-161; Arts & Sciences Elective Code: B

RCP-370 Respiratory Pathology I (2)
Provides an introduction to the study of disease with an emphasis on terminology and basic disease processes. Examines common infectious diseases, acute and chronic respiratory diseases, and cardiovascular disorders. Concentrates on etiology, pathophysiology, signs and symptoms. Provides an overview of respiratory care for the surgical patient, as well as specific management of traumatic chest injury and head trauma. Credits: 2, Hours: (2/0/0/0), Prereq: BIO-186, RCP-300; Arts & Sciences Elective Code: B

RCP-380 Respiratory Pathology II (2.5)
Offers an in-depth study of pulmonary disorders relating the respiratory therapist's role in diagnosis, treatment, pharmacologic management and support; provides practice in gathering appropriate information and making prompt and correct patient care decisions. Credits: 2.5, Hours: (2.5/0/0/0), Arts & Sciences Elective Code: B

RCP-420 Pulmonary Function Testing (2)
Provides theory and operation of equipment in pulmonary function testing with interpretation of test results. Laboratory exercises include gathering data from bedside spirometry, measuring weaning parameters, as well as standard pulmonary function laboratory testing. Credits: 2, Hours: (1/1/1.5/0), Prereq: RCP-220, RCP-300; Arts & Sciences Elective Code: B

RCP-470 Cardiac Monitoring (1.5)
Surveys the theory and application of specialized diagnostic procedures, equipment and monitoring techniques in cardiac medicine. Includes ECG and monitoring leads, basic interpretation and dysrhythmia recognition, thermodilution cardiac output and oxymetrix-mixed venous oxygen measurements, pulmonary artery catheters, hemodynamics and clinical application. Credits: 1.5, Hours: (1.5/0/0/0), Prereq: BIO-161, RCP-300; Arts & Sciences Elective Code: B

RCP-480 Advanced Cardiac Care (2.5)
Provides theory and laboratory practice in managing specific life-threatening cardiac dysrhythmias resulting from myocardial infarction. Includes review of basic life support, use of mechanical aids to establish an airway and maintain ventilation, ECG monitoring and recognition of life-threatening dysrhythmias, cardiac defibrillation, establishing an intravenous drug access, and initiating appropriate cardiac drug therapy. Credits: 2.5, Hours: (2/1/0/0), Prereq: RCP-735; Arts & Sciences Elective Code: B

RCP-510 Respiratory Care II (6)
Explores the theory, equipment operation and application with laboratory exercises in adult and pediatric/neonatal mechanical ventilation, IPPB and arterial blood gas analysis. Examines the effect of mechanical ventilation on acid base balance. Laboratory emphasis on the operation and application of adult and pediatric/neonatal ventilators. Credits: 6, Hours: (4/4/0/0), Prereq: CHM-110, RCP-220; Arts & Sciences Elective Code: B

RCP-610 Perinatology (2.5)
Explores fetal growth and development, assessment of the high-risk newborn and respiratory care of the perinatal/pediatric patient. Reviews specific medical/surgical pathology in the newborn and pediatric patient. Credits: 2.5, Hours: (2/1/0/0), Arts & Sciences Elective Code: B

RCP-730 Respiratory Care Clinic I (2.5)
Provides students with clinical practice in order to demonstrate proficiency in physical assessment, oxygen therapy, airway care and IPPB skills. Students observe and practice mechanical ventilation and arterial blood gas analysis skills. Credits: 2.5, Hours: (0/1/6/0), Prereq: RCP-210; Coreq: RCP-220; Arts & Sciences Elective Code: B

RCP-735 Respiratory Care Clinic II (6.5)
Provides students an opportunity to maintain proficiency in RC Clinic I skills and demonstrate proficiency in ventilation and arterial blood gas analysis. Provides an opportunity to practice pediatric respiratory care, hemodynamic monitoring and demonstrate proficiency in pulmonary function testing. Students observe diagnostic techniques in ECG, cardiac catheterization lab and bronchoscopy lab. Credits: 6.5, Hours: (0/1/18/0), Prereq: RCP-510, RCP-730; Arts & Sciences Elective Code: B

RCP-740 Respiratory Care Clinic III (6.5)
Provides students an opportunity to maintain proficiency in RC Clinics I and II skills, demonstrate proficiency in pediatric/perinatal respiratory care, practice clinical education techniques and observe management skills. Credits: 6.5, Hours: (0/1/18/0), Prereq: RCP-735; Arts & Sciences Elective Code: B

RCP-850 Respiratory Care III (2.5)
Surveys the theory and application of specialized diagnostic procedures, equipment and monitoring techniques in pulmonary medicine and critical care. Includes bronchoscopy, oximetry, capnography and transcutaneous monitoring. Explores the elements of pulmonary rehabilitation with laboratory exercises in breathing retraining. Examines the theory and operation of pleural drainage systems. Credits: 2.5, Hours: (2/1/0/0), Prereq: RCP-510; Arts & Sciences Elective Code: B

RCP-890 Respiratory Care Applications (2)
Culminates the learning activities of the previous five semesters of study in respiratory care. Integrates the theory and application of respiratory care to focus on case management, clinical problem solving and clinical simulation. Case discussions will selectively cover the spectrum of cardiopulmonary disorders for both pediatric and adult patients. Credits: 2, Hours: (1/2/0/0), Prereq: RCP-380, RCP-610, RCP-735; Arts & Sciences Elective Code: B; Comments: Must pass RCP-735 with a C- or better to enroll in RCP-890

RCP-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

RCP-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

RDG: Reading

RDG-130 Effective Reading Strategies (3)
Provides instruction in study skills and reading improvement for college readers. Develops flexibility in students' reading rates and strategies for improving comprehension of standard college texts. Provides practice with library, test taking, time management and vocabulary skills. Recommended to be taken in conjunction with another college-level course. Also recommend: a COMPASS score 71 or above or ACT score of 16 or above. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

RDG-200 College Reading (3)
Introduces college-level reading skills, including identifying and analyzing factual statements, topics, and supporting details; recognizing, using, developing and outlining relationships; and learning critical reading strategies. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: D

RDG-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

RDG-928 Independent Study (1-3)
Allows the student to pursue a special concentration of study under the guidance of a faculty member. Requires an independent study contract. Credits: 1-2, Hours: (0/2-4/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

REL: Religion

REL-101 Survey of World Religions (3)
Introduces the study of religions and religious phenomena through an examination of several historical and contemporary religions from around the world. Includes a study of some of the following: American Indian traditions, Hinduism, Buddhism, Judaism, Christianity, Islam, Shintoism, ancient and contemporary feminist spirituality, gnosticism, shamanism, Confucianism and Taoism. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-120 Judaism, Christianity and Islam (3)
Introduces the beliefs, values, and practices of Judaism, Christianity and Islam. Both historical and contemporary phenomena are used to develop an understanding of the diversity and complexity of the religious dimension of human life. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-125 Introduction to Islam (3)
Introduces the beliefs, values and practices of Islam. Both historical and contemporary phenomena are used to develop an understanding of the diversity and complexity of the Muslim religion. Attention is also given to critical issues within Islam in the modern world. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-130 Introduction to Religions of the East (3)
Introduces some of the religious traditions and systems of belief found in the East. Both historical and contemporary phenomena are used to develop an understanding of the diversity and complexity of the religious dimension of human life. Various forms of some of the following religions are included: Buddhism, Shintoism, Hinduism, Taoism, Jainism and Confucianism. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-140 Religion in the United States (3)
A historical survey of religion in the United States from the colonial period to the present, with emphasis upon the increasing diversity of American religions. Religious developments will be related to the broader cultural aspects of the American experience. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-160 Religions of China (3)
Studies some of the main religious systems and traditions of China, both pre-modern and modern. The general rubric used will divide Chinese religious systems into four main categories: Confucian, Daoist, Buddhist and Popular, although some attention will be give to studying the reality that Chinese religion as practiced tends to cross over such artificial boundaries. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-165 Japanese Religions (3)
Covers some of the main religious systems and traditions of Japan, both pre-modern and modern. The general rubric used will divide Japanese religious systems into five main categories: Shinto, Daoist, Buddhist, Confucian and New/Popular, although attention will be given to studying the reality that Japanese religion as practiced tends to cross over such artificial boundaries. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

REL-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

REL-928 Independent Study (1-3)
Provides readings, papers, study and research under the guidance of a faculty member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

SCI: Science

SCI-050 Science Principles (3)
Introduces basic science theories, facts, and principles. Designed to form a foundation of scientific knowledge for any future college science courses. Designed for students who do not have a strong science background or for students who have been out of school for several years. Topics include scientific method, the metric system, basic equations and formulas, energy and motion, heat and temperature, cellular structure, basic geology, and chemical reactions. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

SCI-120 Forensic Science (3)
Explores forensic science and its impact on science, society and the criminal justice system. Focuses on basic concepts in selected areas of chemistry, biochemistry, cell and molecular biology, and anatomy and physiology. This course is designed to educate liberal arts students about basic sciences, and the realities and limitations of scientific methods when applied specifically to criminal investigation. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SCI-122 Forensic Science Laboratory (1)
Focuses on laboratory procedures used in a wide variety of forensic disciplines. Includes the scientific method, identification of body fluids, blood spatter analysis and forensic entomology. Explores the theory of forensic methods along with its limitations. Credits: 1, Hours: (0/2/0/0), Coreq: SCI-120; Arts & Sciences Elective Code: A

SDV: Student Development

SDV-022 Study Strategies (2)
Provides instruction and practice in time scheduling and management, effective use of textbooks, effective study skills, note taking, test-taking strategies and listening skills. Must be enrolled in the College Prep Block. Credits: 2,

Hours: (2/0/0/0), Arts & Sciences Elective Code: D

SDV-027 College Preparation: Study Skills (2)
Introduces college-level study skills. Focuses on practical application of study skills necessary for college success including organization skills, effective goal setting, determining the main idea, and developing effective and efficient study skills. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

SDV-052 Supported Education (1-3)
Provides academic support, accommodations and strategies needed to successfully complete the Kirkwood course of study. Develops an individualized education plan and accommodation plans designed to develop effective study skills and self-advocacy skills. Monitors students' progress in Kirkwood courses. Format is primarily individualized instruction. Credits: 1-3, Hours: (0/2-6/0/0), Arts & Sciences Elective Code: D

SDV-057 Teacher Proficiency Test Preparation (1)
Provide individualized instruction to prepare student to pass the Teacher Preparation Proficiency test. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

SDV-077 Supported Education - VITAL (3)
Provides academic support, accommodations and strategies VITAL students need to successfully complete the Kirkwood course of study. Develops an individualized education plan and accommodations plan designed to develop effective study skills and self-advocacy skills. Monitors students' progress in Kirkwood courses. Format is primarily individualized instruction. Credits: 3, Hours: (0/6/0/0), Arts & Sciences Elective Code: D; Comments: Concurrent enrollment in VITAL.

SDV-080 Supported Education: Transition (1)
Provides instruction and hands-on skill development to students enrolled in the Prairie Wood Transition Program. Consists of academic classroom instruction, life skills, accommodations and strategies for success in the Transition Program, including campus and community experiences. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: D

SDV-082 College Prep Career Exploration (2)
Teaches students the career exploration process by evaluating their unique combination of personal characteristics, values, needs and goals on the journey to creating an effective and meaningful career and life plan. Credits: 2, Hours: (2/0/0/0), Coreq: ENG-059, RDG-200; Arts & Sciences Elective Code: D; Comments: Part of the 12-credit College Prep block offered Fall semester. Approval of Dean, Learning Services, required.

SDV-084 Academic Prep I (1)
Provides individualized computer-assisted instruction in math, reading, writing and critical-thinking skills to academically prepare students for future course work in their major. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

SDV-086 Academic Prep II (1)
Provides individualized computer-assisted instruction in math, reading, writing and critical-thinking skills to academically prepare students for future course work in their major. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

SDV-093 College Survival Skills (1)
Transitions first-year, first-semester Student Support Service students into the postsecondary environment via an Internet forum. Students learn about available support services, appropriate social and study skills, and how to use the Internet. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

SDV-096 College Prep Writing II (3)
Provides students with basic skill writing instruction in a traditional class setting. This second-semester College Prep block writing course continues the basic writing instruction provided in the first semester. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

SDV-098 College Prep Math (3)
Provides students with basic math skills and instruction in a traditional class setting. This first-semester College Prep block math course provides basic math skills in the areas of fractions, decimals, percent, operation and whole number operations. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

SDV-099 College Prep Math II (3)
Provides students with math skills and instruction in a traditional class setting. This second-semester College Prep block math course provides instruction in the area of order of operation, formulas, equations, ratio and proportion. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

SDV-101 How To Be Successful In College (3)
Provides classroom and group instruction on skills needed to be a successful college student. The course includes academic skill building and covers topics such as student responsibility, how to read a syllabus, policies and procedures of the college, and effective goal setting to achieve student success. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

SDV-102 How College Works (1)
Explores students' individual strengths, and life and vocational goals, as they identify a college program or major. Emphasizes using self-assessments to identify appropriate career areas, understanding the differences between high school and college expectations, taking and using placement tests for college admission, and managing personal finances to afford a college education. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

SDV-109 College 101 (3)
Directs students' attention to the college academic culture and connects them to resources that will aid in their success. Focuses on developing academic success skills. Includes study and classroom performance strategies, personal development, academic and career planning, and participation in the college culture. This course is designed for incoming freshmen. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SDV-119 Information Literacy (1)
Introduces students to the library research process. Students will learn to systematically and efficiently locate, evaluate and use information through hands-on practice. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

SDV-121 College Prep Seminar (3)
Provides continued instruction on time scheduling and management, organizational skills and effective college-level study skills. Focuses on career development, career choices and academic planning, as well as the use of assistive technology to reach goals. Credits: 3, Hours: (3/0/0/0), Prereq: BCA-080, ENG-013, MAT-700, RDG-200, SDV-027; Arts & Sciences Elective Code: B

SDV-135 Job Seeking Skills (1)
Assists students who will be seeking an internship, or part-time or full-time employment. The areas that will be covered include how to research the job market and companies, writing resumes and cover letters, improving job interviewing techniques, and how to utilize Kirkwood's job search assistance services. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

SDV-160 Career Decision Making (2)
Provides an understanding of the career development process, and assists students in making satisfactory career choices. Includes self-assessment, career information research, decision making and job search strategies. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: A

SDV-175 Tools for Life Seminar (3)
Furthers the understanding of the interrelationships among individuals, the college, the family, work and society. Develops leadership, study habits, communication skills and decision-making abilities, especially in education and career areas. Students consider learning as a process. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SDV-178 Stress Management (1)
Studies causes and symptoms of stress (positive and negative), stress management, stress reduction, self-talk and self-esteem. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: A

SDV-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

SDV-928 Independent Study (1)
Broadens students' knowledge of personal skills, talents, interests and strengths. Focuses on researching career information and individually exploring a variety of career options, with assistance from the instructor. Students develop action plans for the future. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor

SOC: Sociology

SOC-110 Introduction to Sociology (3)
Surveys the basic principles, concepts, research strategies and empirical findings representative of the field today. The course examines the range of sociological thought, identifies areas of specialization within the discipline and establishes a basis for further study in the field. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-115 Social Problems (3)
Examines social problems as consequences of given types of social organization. Students examine research and theory to build an understanding of the definition, existence and persistence of social problems, as well as collective efforts to resolve those problems. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-120 Marriage and Family (3)
Explores contemporary family institutions by studying the family as an ideological, demographic, historic, economic and legal entity. The marital life cycle is documented through current research. Marital dissolution and remarriage are also examined. The course emphasizes the continuities and discontinuities in the family experience of individuals and the society as a whole. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-132 Sociology of Loss, Grieving and Growth (3)
Explores loss as a social construction influenced by the structure and organization of society. Examines loss as a part of life including loss of community, a caregiver, a relationship, a job, and loss through divorce, illness and death. Studies processes involved in grieving and growth. Discusses historical and cross-cultural definitions and ethical issues. References societal resources that may be accessed for growth. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-135 Death and Dying (3)
Examines selected topics dealing with death and dying including health care, religious, social, legal and funeral practices. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-200 Minority Group Relations (3)
Examines majority-minority group relations utilizing sociological theory and research. Addresses diverse populations with special attention placed on race, ethnicity, gender and other disadvantaged categories in American society. Students will apply basic concepts central to inter-group relations and their implications. Students will consider the consequences of inequality. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-265 Introduction to Lesbian, Gay, Bisexual & Transgender Studies (3)
Introduces students to Lesbian, Gay, Bisexual and Transgender (LGBT) studies. Explores the impact of social, cultural, historical and political factors on LGBT individuals and communities. Studies the social construction of LGBT persons and cultures across time and place, theoretical debates regarding sexual orientation, identity formation, LGBT people of color, gender roles and gender identity, homophobia, and HIV/AIDS. Includes contemporary LGBT issues in families, education, religion, media and the law. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-270 Social and Behavioral Research Methods (3)
Develops skills for evaluating empirical and public literature dealing with the scientific study of behavior; experimental and nonexperimental methods of investigation; principles of research design and control; philosophy of scientific social science; planning, conducting and reporting research. Credits: 3, Hours: (3/0/0/0), Prereq: PSY-111 or SOC-110, MAT-157; Arts & Sciences Elective Code: A

SOC-284 Sociology of the Environment (3)
Explores the application of the sociological perspective to local, national and global environmental issues, with a particular focus on sustainability. Studies theories and methodologies that guide environmental research and ethical issues. Examines the way complex social structures and processes define, create and interact with the natural environment. Includes research on land use, population, waste disposal, public health, environmental justice, the environmental movement and public policy. Provides students with an opportunity to learn and apply grant writing skills. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SOC-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires that student meet honors eligibility criteria. Requires completion for an honors project contract. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

SOC-928 Independent Study (1)
Provides readings, papers, basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A

SPC: Speech

SPC-101 Fundamentals of Oral Communication (3)
Studies basic communication theory and practice including communication process, interpersonal relationships, small group interaction and public speaking. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SPC-112 Public Speaking (3)
Studies the fundamentals of public speaking, emphasizing the process of speech preparation and delivery. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SPC-122 Interpersonal Communication (3)
Highlights the role of communication and focuses on becoming effective communicators in personal and professional relationships. Examines how the concepts of self and human behavior influence both interpersonal and intrapersonal communication. Introduces activities and techniques to improve one-on-one and small group communication skills, especially listening, nonverbal communication and conflict resolution. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SPC-132 Group Communication (3)
Examines the theory and techniques used in discussion and group processes. Develops leadership and group skills through frequent practical application in varying group sizes and opportunities. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: A

SPC-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of an honors faculty member. Requires completion of an honors project learning contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

SPC-928 Independent Study (1-3)
Provides readings and research opportunities under the guidance of a faculty member. Credits: 1-3, Hours: (1-3/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor

SUR: Surgical Technology

SUR-126 Surgical Technology I (6.5)
Provides an introduction to the knowledge and skills required for Surgical Technologists. Credits: 6.5, Hours: (4.5/4/0/0), Arts & Sciences Elective Code: B

SUR-225 Surgical Technology II (4)
Provides basic case preparation and surgical procedures necessary to begin operating room experience. Credits: 4, Hours: (3/2/0/0), Prereq: SUR-126; Arts & Sciences Elective Code: B

SUR-340 Surgical Specialties (4)
Provides information on each of the surgical specialties that may be experienced in the operating room. Credits: 4, Hours: (4/0/0/0), Coreq: SUR-225, SUR-520; Arts & Sciences Elective Code: B

SUR-421 Surgical Technology Pharmacology (1)
Provides information needed to calculate and handle drugs in the operating room. Provides an overview of the administration and general practice of anesthesia in surgery. Credits: 1, Hours: (1/0/0/0), Coreq: SUR-225; Arts & Sciences Elective Code: B

SUR-440 Biomedical Sciences for Surgical Technology (2)
Provides a broad base of knowledge for entry-level surgical technologists. Focuses on computers, electricity, physics, robotics and other fundamental technologies essential to the profession. Credits: 2, Hours: (2/0/0/0), Prereq: SUR-126; Coreq: SUR-225; Arts & Sciences Elective Code: B

SUR-520 Surgical Technology Practicum I (2)
Provides hands-on, first-level clinical experience in the operating room. Credits: 2, Hours: (0/0/6/0), Prereq: HSC-210, SUR-126; Coreq: SUR-225; Arts & Sciences Elective Code: B

SUR-523 Surgical Technology Practicum II (9)
Provides an extensive hands-on clinical experience in all entry-level skills for Surgical Technologists. Credits: 9, Hours: (0/0/27/0), Prereq: BIO-161, SUR-340; Coreq: SUR-520; Arts & Sciences Elective Code: B

SUR-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

UTL: Utilities

UTL-260 High Pressure Boilers (2)
Covers the principles of high pressure boiler operation. Includes steam boiler types, package and field erected boilers, steam systems, feed water systems, fuel systems, pumps, regulators, traps, superheating, de-superheating and pressure reducing systems. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

UTL-270 Boiler and Chiller Inspection and Maintenance (1)
Covers the techniques, procedures and practices for boiler and chiller inspection and maintenance. Includes preventive and predictive maintenance procedures; maintenance of boiler room and heating equipment; water quality maintenance; fire protection and structure; and maintenance of centrifugal, reciprocating, OPAC and modular chillers. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

WAT: Water Environmental Technology

WAT-210 Wastewater Treatment: Industrial (4)
Describes common methods and systems used to treat wastes generated by industrial processes. Learning activities include a review of applicable federal and state regulations and pretreatment requirements. Credits: 4, Hours: (4/0/0/0), Prereq: WAT-307; Arts & Sciences Elective Code: B

WAT-300 Water Analysis (3)
Introduces basic laboratory safety and gravimetric, spectrophotometric electrochemical, titrimetric and microbiological methods. Students learn the procedures for regulatory sampling and safety, and specific analytical procedures for total residue, fluoride, pH, ammonia, acidity, alkalinity, calcium, chloride, hardness and coliform analysis. Along with reading assignments from the text, the course is enhanced with up-to-date photographs, interactive exercises and online links. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

WAT-301 Basic Mechanical Maintenance and Pumps (3)
Covers maintenance and repair procedures for pumps typically found in water/wastewater treatment facilities. Students learn basic concepts of hydraulics, pump curves and energy consumption. General safety concerns are also emphasized. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

WAT-304 Water Treatment I (4)
Explores the rudiments of water treatment. Students learn regulatory monitoring, iron manganese removal, filtration, coagulation, flocculation, fluoridation and disinfection. Along with reading assignments from the text, the course is enhanced with audio, up-to-date photographs, interactive exercises and online links. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B

WAT-305 Water Distribution Systems (4)
Provides a working knowledge of potable water distribution systems. Students learn about water storage facilities, operation and maintenance of water mains, water quality issues, disinfection and safety. Along with reading assignments from the text, the course is enhanced with audio, up-to-date photographs, interactive exercises and online links. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B

WAT-306 Wastewater Collection Systems (4)
Provides a working knowledge of wastewater collection systems. Students learn wastewater collection systems safety procedures, sewer inspection and testing, pipeline and maintenance, underground repair, lift stations, equipment maintenance and sewer rehabilitation. Along with reading assignments, the course is enhanced with up-to-date photographs, audio, interactive exercises and links. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B

WAT-307 Wastewater Treatment I (4)
Explores the rudiments of wastewater treatment. Students learn water pollution control, preliminary and primary treatment, fixed film processes and suspended growth systems. Along with reading assignments from the text, the course is enhanced with up-to-date photographs, audio, interactive exercises and online links. Credits: 4, Hours: (4/0/0/0), Arts & Sciences Elective Code: B

WAT-308 Wastewater Analysis (3)
Using the Internet, students obtain the skills and knowledge to properly monitor the treatment process to conform to compliance regulations. Topics include BOD, COD, ammonia, grease and oil, chlorine and solids analysis. The academic portion of the course, self-study exercises and quizzes are all done over the Internet. The course includes hands-on labs at Kirkwood or proficiencies that an operator can complete on the job. Students are able to enroll at any time, set their own schedule for online studies and interact with the instructor outside of the classroom. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

WAT-311 Wastewater Treatment II (4)
Describes wastewater treatment methods and concepts that are found in more advanced wastewater treatment facilities such as activated sludge, anaerobic digestion, effluent disposal and reclamation, and nitrogen and phosphorous removal methods. Credits: 4, Hours: (4/0/0/0), Prereq: WAT-307; Arts & Sciences Elective Code: B

WAT-312 Water Treatment II (4)
Describes treatment methods and concepts that are found at advanced water treatment facilities such as softening, demineralization, trihalo methanes, taste and odor control, corrosion control and disposal of process wastes. Credits: 4, Hours: (4/0/0/0), Prereq: WAT-304; Arts & Sciences Elective Code: B

WAT-400 Permits and Administration (1)
Examines many of the supervisory and managerial issues faced by a water/wastewater professional. Students focus on operations management and permit procedures, as well as people skills. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: B

WAT-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

WAT-928 Independent Study (2)
Offers special investigative projects related to water or wastewater plant operations selected by the student with the approval of the department advisor. Credits: 2, Hours: (0/4/0/0), Arts & Sciences Elective Code: B

WAT-932 Internship (3)
Offers a supervised training period in a water or wastewater treatment plant. The student participates in the routine daily operation and maintenance of the host water or wastewater treatment facility. Credits: 3, Hours: (0/6/0/0), Arts & Sciences Elective Code: B

WEL: Welding

WEL-105 Welding Principles (2)
Provides students with instruction in welding and cutting principles and their applications. Course includes comprehensive treatment of electrical theory, safety, equipment, electrodes, types of joints and welds, metals and their characteristics, testing and inspection, welding certifications, specifications and codes. This course follows the American Welding Society guidelines. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

WEL-110 Welding Blueprint Reading (2)
Studies basic elements of drawings, orthographic views, structural drawings and welding symbols associated with welding fabrication. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

WEL-113 Welding Blueprint Reading/Pipe (1)
Studies basic blueprint pipe welding symbols, dimensioning for layout and methods of representing a pipe layout. Credits: 1, Hours: (1/0/0/0), Prereq: WEL-110; Arts & Sciences Elective Code: B

WEL-128 Brazing/Soldering (2)
Introduces the techniques and procedures used to braze, braze weld and silver solder. Studies the various methods and procedures of oxyacetylene repair welding of cast iron and nonferrous mate-

rials. Aluminum welding techniques are stressed. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

WEL-130 Oxyacetylene Welding (2)
Provides instruction in oxyacetylene welding, including the setup and operation of equipment and accessories. Welding procedures for light gauge steel and heavy steel plate in all positions and various joint types are taught. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

WEL-134 Cutting Processes (2)
Develops skills used in oxyacetylene flame cutting, plasma cutting and semiautomatic flame cutting. Students learn about setup, operation and maintenance of equipment. Safety is stressed. Credits: 2, Hours: (0.5/3/0/0), Arts & Sciences Elective Code: B

WEL-140 Introduction to Arc Welding and Weaving (1)
Includes operation of AC and DC welding equipment. Striking an arc, beads of weld in all directions, in the flat position and building beads of weld. Welding safety is stressed. Also covers welding techniques used to make beads of weld any width. Three basic weave patterns are taught. Credits: 1, Hours: (0.25/1.5/0/0), Arts & Sciences Elective Code: B

WEL-141 Introduction to Joint Welding (1)
Studies in detail fillet welds in the flat position using single- and multiple-pass techniques. Includes an introduction to welding metallurgy. Credits: 1, Hours: (0.25/1.5/0/0), Arts & Sciences Elective Code: B

WEL-142 Butt Joints (1)
Introduces the basic methods of preparing and welding butt joints in the flat position. Also includes the use of the A.W.S. welding symbols. Credits: 1, Hours: (0.25/1.5/0/0), Arts & Sciences Elective Code: B

WEL-143 Horizontal Welding Techniques (1)
Introduces horizontal welding techniques and methods used to make various types of joints in the horizontal position. Credits: 1, Hours: (0.5/1/0/0), Arts & Sciences Elective Code: B

WEL-144 Vertical Welding Techniques (1)
Introduces vertical welding techniques and methods used to make various types of joints in the vertical position. Credits: 1, Hours: (0.25/1.5/0/0), Arts & Sciences Elective Code: B

WEL-145 Overhead Welding Techniques (1)
Introduces overhead welding techniques and methods used to make various types of joints in the overhead position. Credits: 1, Hours: (0.25/1.5/0/0), Arts & Sciences Elective Code: B

WEL-146 AWS Bend Test (4)
Covers the testing of welds including the preparation and welding of A.W.S. Welder Certification Guided Bend Tests in all positions using E-7018 electrodes. Students must pass this test to complete the metallic arc welding section of the welding program. Credits: 4, Hours: (1/6/0/0), Prereq: WEL-157; Arts & Sciences Elective Code: B

WEL-156 Welding Skills I (4)
Includes introductory concepts and theories in shielded metal arc welding. Students learn welding techniques for weaving and flat position fillet welds. Oxyacetylene torch and plasma cutter operation are also covered. Credits: 4, Hours: (1.5/5/0/0), Arts & Sciences Elective Code: B

WEL-157 Welding Skills II (4)
Introduces student to stick welding in the horizontal, vertical and overhead positions. Students learn to apply basic techniques to solve advanced welding situations. Credits: 4, Hours: (1/6/0/0), Prereq: WEL-156; Arts & Sciences Elective Code: B

WEL-184 GMAW (3)
Studies the setup and operation of the semiautomatic welding process, using both hard wire and flux core wire. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

WEL-185 Advanced GMAW (3)
Continues the study of gas metal arc welding. Learning activities focus on the welding process as it relates to the welding of stainless steels and aluminum. Flux core welding is included. Credits: 3, Hours: (1/4/0/0), Prereq: WEL-184; Arts & Sciences Elective Code: B

WEL-192 Gas Tungsten Arc Welding (4)
Covers all position welding techniques on ferrous and nonferrous materials using the heliarc welding process. Credits: 4, Hours: (1.5/5/0/0), Prereq: WEL-130; Arts & Sciences Elective Code: B

WEL-199 Introduction to Flux Core (1)
Continues the study of gas metal arc welding. Learning objectives focus on semiautomatic welding process as it applies to flux cored welding. Students weld with both dual shield and self-shielding wires. Students learn the strengths and weaknesses of both processes. Credits: 1, Hours: (0/2/0/0), Prereq: WEL-184; Arts & Sciences Elective Code: B

WEL-201 Procedures and Qualifications (1)
Provides students with a thorough technical understanding of the importance of weld quality through development of procedures, qualification of procedures and measurement of people performance (skill and ability). The sequence of events required to prove proper methods, skills and maintenance of the qualification systems is also presented to provide a complete analysis of the requirements for quality welding. Credits: 1, Hours: (0.5/1/0/0), Prereq: WEL-203; Arts & Sciences Elective Code: B

WEL-202 Discontinuities and Defects (1)
Provides students with a thorough technical understanding of discontinuities and defects associated with arc welding. Welding discontinuities are identified, defined and the causes established related to weld shape, size and contour; internal inconsistencies and weld metal irregularities; and weld and base metal properties. These discontinuities are discussed with relation to variables in the welding procedure specific to the welding process employed. Credits: 1, Hours: (0.5/1/0/0), Prereq: WEL-157 or WEL-184; Arts & Sciences Elective Code: B

WEL-203 Welding Codes (1)
Provides the student with a thorough technical understanding of the purpose for welding codes, as well as the application of codes. Information is presented to explain the relationship between weld quality and the use of welding codes. Credits: 1, Hours: (0.5/1/0/0), Prereq: WEL-206; Arts & Sciences Elective Code: B

WEL-204 Destructive Testing (1)
Provides students with a thorough technical understanding of the purpose for destructive testing and procedures applicable to the variety of common destructive methods. The results of the test method are discussed to reinforce the reasons for testing in relation to weld quality. Credits: 1, Hours: (0.5/1/0/0), Prereq: WEL-202; Arts & Sciences Elective Code: B

WEL-205 Nondestructive Testing (1)
Provides students with a thorough technical understanding of the purpose for nondestructive testing and the procedures applicable to the variety of common nondestructive methods. The results of the test methods are discussed to reinforce the reasons for testing in relation to weld quality. Credits: 1, Hours: (0.5/1/0/0), Prereq: WEL-204; Arts & Sciences Elective Code: B

WEL-206 Quality Assurance Program (2)
Provides the student with a thorough technical understanding of the elements that must be considered to develop a quality assurance and quality control program. Information is presented to explain the relationship between cost and weld quality and the duties typically performed by the welding inspector. Credits: 2, Hours: (2/0/0/0), Prereq: WEL-105; Arts & Sciences Elective Code: B

WEL-208 Introduction to Fabrication (2)
Provides students with hands-on fabrication basics used by welding industries. Covers layout, reading blueprints, applied math, cost estimation, jigs and fixtures, and introduction to shearing, bending, drilling, sawing and other manufacturing process associated with welding fabrication. Credits: 2, Hours: (0/4/0/0), Prereq: MAT-764, WEL-110, WEL-184; Arts & Sciences Elective Code: B

WEL-230 Welding Quality Assurance (3)
Focuses on understanding weld discontinuities and defects, their causes and prevention, and testing and maintaining weld quality. Emphasizes the importance of weld quality, and how quality is achieved through procedures, qualification of those procedures and welder qualification testing. Explores the relationship between weld quality and welding code use. Results of test methods are discussed to reinforce the reasons for testing. Credits: 3, Hours: (3/0/0/0), Arts & Sciences Elective Code: B

WEL-260 Welding Health and Safety Certificate (2)
Provides basic training and professional certifications in welding workplace health and safety. Credits: 2, Hours: (2/0/0/0), Arts & Sciences Elective Code: B

WEL-270 Automotive Welding Principles (1)
Covers welding safety and basic, all-position MIG welding of fillet and groove welds using 22 through 12 gauge steel. Students learn to heat components for extraction and cutting of metals using the oxy-acetylene and plasma cutting processes. Included are proper techniques for extracting broken bolts and flame cutting nuts from

bolts. Credits: 1, Hours: (.5/1/0/0), Arts & Sciences Elective Code: B

WEL-302 Pipe Welding/ SMAW (2)
Provides basic pipe welding techniques in the 2G and 2F positions using E6010 and E7018 electrodes. Basic fit-up and weld-off techniques with fillet welds and groove welds (with and without backing) are learned. Specimens are welded and tested to ASME code standards. Credits: 2, Hours: (0/4/0/0), Prereq: WEL-157; Arts & Sciences Elective Code: B

WEL-304 Pipe Welding/SMAW Fixed Horizontal (3)
Provides advanced pipe welding techniques in the 5G and 5F positions using E6010 and E7018 electrodes. Basic fit-up and weld-off techniques with fillet welds and groove welds (with and without backing) are learned. Specimens are welded and tested to ASME code standards. Credits: 3, Hours: (1/4/0/0), Prereq: WEL-302; Coreq: WEL-305; Arts & Sciences Elective Code: B

WEL-305 Pipe Welding/SMAW Qualification (3)
Provides advanced pipe welding techniques in the 6G and 6F positions using fillet welds and groove welds (with and without backing). Specimens are welded and tested to ASME code standards. Credits: 3, Hours: (1/4/0/0), Prereq: WEL-302; Arts & Sciences Elective Code: B

WEL-306 Pipe Welding/GMAW (3)
Focuses on entry-level skills using the gas metal arc welding process on pipe. Credits: 3, Hours: (1/4/0/0), Prereq: WEL-184; Arts & Sciences Elective Code: B

WEL-307 Pipe Welding/GTAW (3)
Teaches entry-level skills using the gas tungsten arc welding process on small-diameter, thin-wall steel pipe in all positions. Credits: 3, Hours: (1/4/0/0), Prereq: WEL-192; Arts & Sciences Elective Code: B

WEL-311 Pipe Weld/Heavy Wall GTAW (5)
Teaches entry-level skills using the gas tungsten arc welding process on large-diameter, heavy-wall steel pipe in all positions. Credits: 5, Hours: (1/8/0/0), Prereq: WEL-192; Arts & Sciences Elective Code: B

WEL-331 Welding Fundamentals (2)
Covers basic welding techniques with oxyacetylene and electric welders. Designed for the general tradesperson working in the areas of mechanics and automotive technology. Students are introduced to a variety of welding situations including cutting, brazing and various welding positions on lighter gauges of metal and basic fabrication. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

WEL-333 Auto Collision Welding (2)
Introduces basic welding techniques that can be applied to auto collision repair. Students learn to weld light gauge sheet metal with the GMAW process. Instruction emphasizes the requirements needed to pass the I-CAR Automotive GMA (MIG) Welding Steel Qualification Test. Students also receive instruction in the use of an oxyacetylene torch and a plasma cutter. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

WEL-360 Production TIG Welding (4)
Focuses on proper weld safety, machine setup and welding techniques for gas tungsten arc welding. Students perform American Welding Society compliant welds on stainless, aluminum and mild steels in the flat and horizontal positions. AWS welder qualifications issued upon successful completion of course. Credits: 4, Hours: (1.5/5/0/0), Arts & Sciences Elective Code: B

WEL-370 Production MIG Welding (4)
Teaches proper weld safety, machine setup and welding techniques for gas metal arc welding using short arc, spray and pulse metal transfer methods. Students perform American Welding Society compliant welds on stainless, aluminum and mild steels in the flat and horizontal positions. AWS welder qualifications issued upon successful completion of course. Credits: 4, Hours: (1/6/0/0), Arts & Sciences Elective Code: B

WEL-400 Welding for Maintenance Trades (4)
Covers welding/shop safety, welding theory, welding blueprint reading, repair welding, and several different welding technologies. Emphasizes GMAW, SMAW, GTAW, OAC and plasma-arc welding methods, in a hands-on lab setting. Credits: 4, Hours: (2/4/0/0), Prereq: MAT-109; Arts & Sciences Elective Code: B

WEL-710 Robotic Welding (3)
Covers the fundamental operating principles, weld process controls and optimization strategies for robotic Gas Metal Arc Welding. Introduces key principles, variables and applications universal to the robotic GMAW process through lecture, demonstration and hands-on exercises. Credits: 3, Hours: (1/4/0/0), Arts & Sciences Elective Code: B

WEL-924 Honors Project (1)
Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Requires approval of supervising professor and dean

WEL-928 Independent Study (1-3)
Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Credits: 1, Hours: (1/0/0/0), Arts & Sciences Elective Code: A; Comments: Permission of instructor, dean

WEL-932 Internship (3-6)
Provides employment in an approved welding-related position. Includes instructor visits/evaluations and employer performance evaluations. Credits: 3-6, Hours: (0/0/0/192-384), Arts & Sciences Elective Code: B

WEL-947 Special Projects (1)
Allows for those needing specific welding training, other than the regular courses, or practice for various weld tests. Also for those needing review or upgrading of methods and skills. Credits: 1, Hours: (0/2/0/0), Arts & Sciences Elective Code: B

WTT: Wind Energy & Turbine Tech

WTT-300 Wind Turbine Construction (2)
Describes the major system attributes of the 2.5 MW Wind Turbine. Provides an overview of the necessary elements to perform a successful installation of the WTG, including specific work instructions, inspection and receiving forms, safety policies and component assemblies. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

WTT-350 Wind Turbine Commissioning (2)
Introduces skills needed to safely commission a wind turbine. Covers component identification, component functions, electrical system troubleshooting and testing, training on the tools needed to perform system troubleshooting and testing, reading and understanding schematics, pitch system troubleshooting and testing, and safety. Credits: 2, Hours: (1/2/0/0), Arts & Sciences Elective Code: B

WTT-400 Wind Turbine Operations (3)
Examines turbine components, design principles, unique features and operating procedures. Provides a decisive understanding of an operating turbine's work flow and explains the interdependency of each of the turbine's systems. Focuses on best practices that minimize wasted man-hours and materials, as well as innovative ideas for cost savings and overall efficiency. Credits: 3, Hours: (2/2/0/0), Arts & Sciences Elective Code: B

WTT-450 Wind Turbine Maintenance (4)
Provides maintenance techniques and extensive testing resources used to maintain the wind turbine generator. Scheduling, preventive maintenance, and lubrication specifications are explored. Focuses on best practices that minimize wasted man-hours and materials, as well as innovative ideas for cost savings and overall efficiency. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: B

WTT-500 Wind Turbine Troubleshooting (4)
Introduces proven troubleshooting techniques and extensive troubleshooting resources. Explores an operating turbine's work flow and the interdependency of each of the turbine systems. Integrates Remote Monitoring Diagnostic Center (RMDC) and Condition Based Monitoring System (CBMS) technology into the troubleshooting process. Exercises replicate the site work environment as closely as possible. Credits: 4, Hours: (2/4/0/0), Arts & Sciences Elective Code: B

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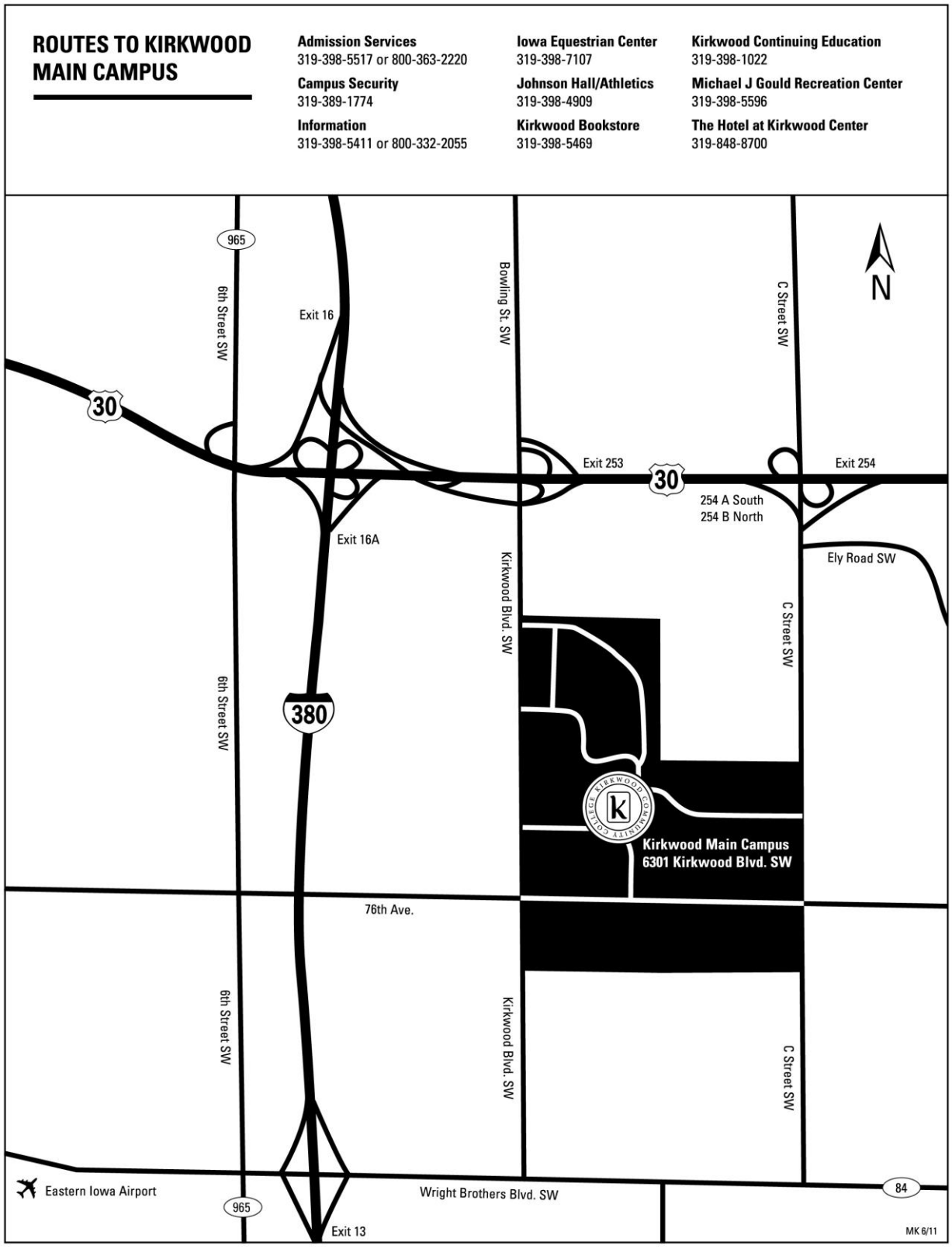
Routes to Kirkwood Campus



Kirkwood Main Campus Locator Map

KIRKWOOD MAIN CAMPUS LOCATOR MAP

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BUS STOP
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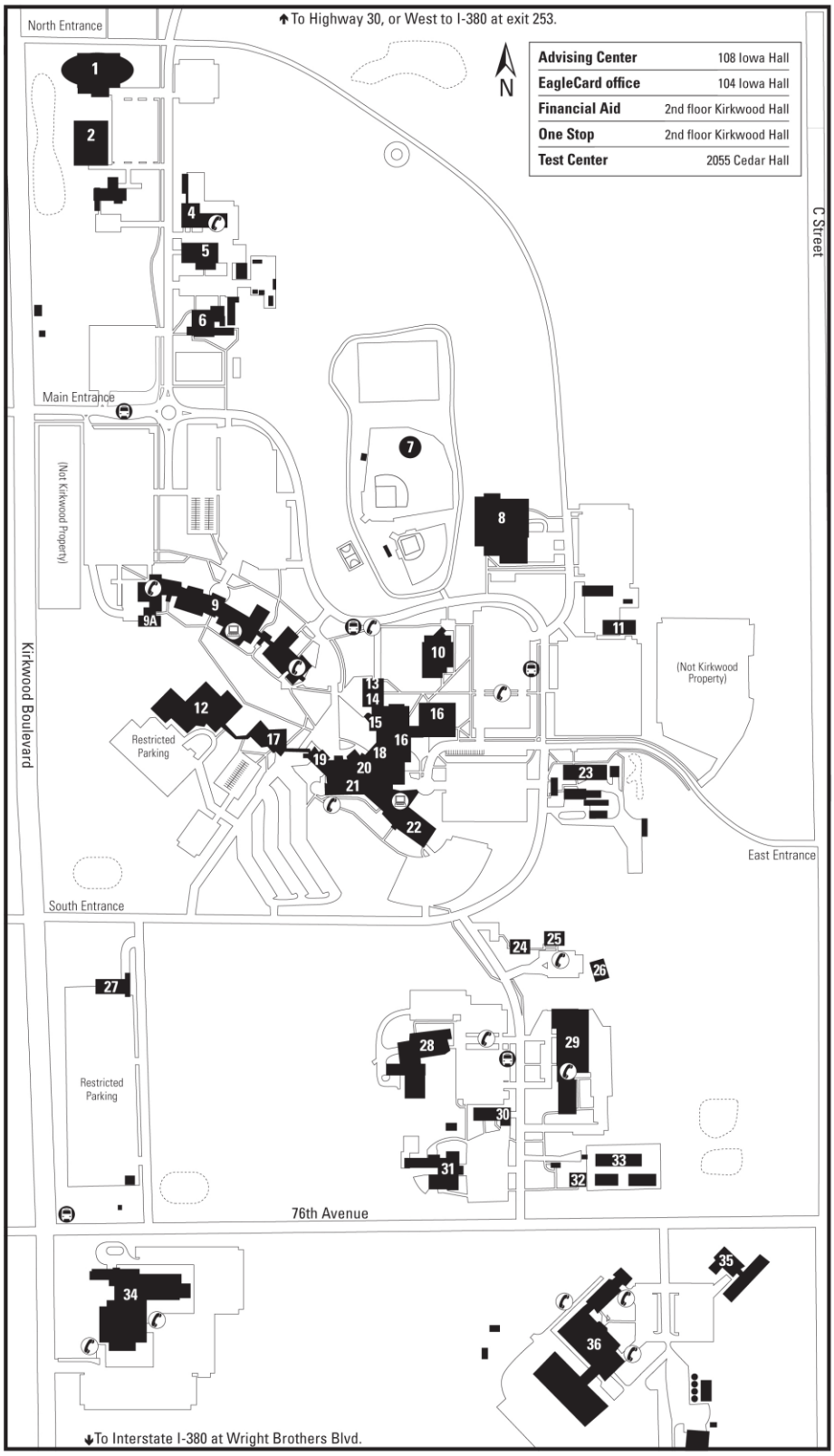
EMERGENCY PHONES
STAFF PARKING



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