

# Course Descriptions

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## Elective Course List for AAOT, ASOT- Business, and ASOT-Computer Science

### *Career Technical Education (CTE) Courses by Subject*

Courses numbered 100 or above in the subjects listed below may be used in the Elective Courses and Elective and/or University Specific Requirement areas of the AAOT, ASOT-Business, and ASOT-Computer Science degrees. Career Technical Courses (CTE) used in these areas may not exceed 12 credits.

<b>AB</b>	Auto Body/Collision Repair	<b>HS</b>	Human Services <i>Except HS-232</i>
<b>ABR</b>	Auto Body/Collision Refinish	<b>IMT</b>	Industrial Maintenance Technology
<b>AM</b>	Auto Service	<b>MA</b>	Medical Assistant
<b>APR</b>	Apprenticeship	<b>MBC</b>	Medical Billing and Coding
<b>BT</b>	Business Technology	<b>MET</b>	Manufacturing Engineering Technology
<b>CDT</b>	Drafting	<b>MFG</b>	Manufacturing
<b>CLA</b>	Clinical Lab Assistant	<b>MUS</b>	Music <i>Only MUS-090, 140, 141, 171, 207, 218, 219, 220, 242, 247</i>
<b>CS</b>	Computer Science <i>Only CS-152, 227, 240M, 240W, 284, 288W, 289</i>	<b>NRS</b>	Nursing
<b>CWE</b>	Cooperative Work Experience	<b>NUR</b>	Nursing
<b>DA</b>	Dental Assisting	<b>OST</b>	Occupational Skills Training
<b>DMC</b>	Digital Media Communications <i>Except DMC-147, 194, 195, 199, 230, 280</i>	<b>PS</b>	Political Science <i>Only PS-280</i>
<b>ECE</b>	Early Childhood Education <i>Except ECE-291, 292</i>	<b>RET</b>	Renewable Energy Technology
<b>ED</b>	Education <i>Only ED-299</i>	<b>SAR</b>	Search and Rescue
<b>EET</b>	Electronic Systems Technology	<b>SBM</b>	Small Business Management
<b>EMP</b>	Emergency Management Professional	<b>SDP</b>	Supervisory Training
<b>EMT</b>	Emergency Medical Technology	<b>SM</b>	Microelectronics Systems Technology
<b>ESH</b>	Environmental Safety & Health	<b>SOC</b>	Sociology <i>Only SOC-280</i>
<b>FRP</b>	Fire Science (Wildland)	<b>TTL</b>	Transportation & Logistics
<b>FST</b>	Fire Science Technology	<b>UAS</b>	Uncrewed Aircraft Systems
<b>GBC</b>	Green Building Construction	<b>UG</b>	Utility Generation
<b>GIS</b>	Geographic Information Systems	<b>UT</b>	Utility Training
<b>GRN</b>	Gerontology	<b>UTL</b>	Utility Training-Line
<b>HDF</b>	Human Development/Family Services	<b>WET</b>	Water-Environmental Technology
<b>HE</b>	Health <i>Only HE-101, 103</i>	<b>WLD</b>	Welding Technology
<b>HOR</b>	Horticulture/Arboriculture/Landscape/Organic Farming	<b>WR</b>	Writing <i>Only WR-128</i>
<b>HPD</b>	Health Professional Development		

# Elective Course List for AAOT, ASOT- Business, and ASOT-Computer Science Degrees

## *Lower Division Collegiate Courses by Subject*

Courses numbered 100 or above in the subjects listed below may be used in the Elective Courses and Elective and/or University Specific Requirement areas of the AAOT, ASOT-Business, and ASOT-Computer Science degrees.

<b>ANT</b>	Anthropology	<b>HE</b>	Health <i>Except HE-101, 103</i>
<b>ART</b>	Art	<b>HPE</b>	Health/Physical Education
<b>ASC</b>	Arts & Sciences	<b>HS</b>	Human Services <i>Only HS-232</i>
<b>ASL</b>	American Sign Language	<b>HST</b>	History
<b>BA</b>	Business Administration	<b>HUM</b>	Humanities
<b>BI</b>	Biology	<b>J</b>	Journalism
<b>CH</b>	Chemistry	<b>LIB</b>	Library
<b>CJA</b>	Criminal Justice	<b>MTH</b>	Mathematics
<b>COMM</b>	Communication Studies	<b>MUP</b>	Music Performance
<b>CS</b>	Computer Science <i>Except CS-152, 227, 240M, 240W, 284, 288W, 289</i>	<b>MUS</b>	Music <i>Except MUS-171, 207, 218, 219, 220, 242, 247</i>
<b>DMC</b>	Digital Media Communications <i>Only DMC-147, 194, 195, 199, 230, 280</i>	<b>PE</b>	Physical Education
<b>EC</b>	Economics	<b>PH</b>	Physics
<b>ECE</b>	Early Childhood Education <i>Only ECE-291, 292</i>	<b>PHL</b>	Philosophy
<b>ED</b>	Education <i>Except ED-299</i>	<b>PS</b>	Political Science <i>Except PS-280</i>
<b>EFA</b>	Educational Focus Area	<b>PSY</b>	Psychology
<b>EL</b>	Study Skills	<b>R</b>	Religion
<b>ENG</b>	English	<b>RD</b>	Reading
<b>ENGR</b>	Engineering	<b>SOC</b>	Sociology <i>Except SOC-280</i>
<b>ESR</b>	Environmental Science	<b>SPN</b>	Spanish
<b>FN</b>	Food & Nutrition	<b>SSC</b>	Social Science
<b>FR</b>	French	<b>TA</b>	Theatre Arts
<b>FYE</b>	First Year Experience	<b>WR</b>	Writing <i>Except WR-128</i>
<b>G</b>	Geology	<b>WS</b>	Women's Studies
<b>GEO</b>	Geography	<b>Z</b>	Zoology
<b>GER</b>	German		
<b>GS</b>	General Science		
<b>HD</b>	Human Development/Career Planning		

## Course Descriptions

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Arts & Sciences . . . . .	169	Humanities . . . . .	220
Auto Body/Collision Refinishing . . . . .	163	Industrial Maintenance Technology . . . . .	221
Auto Body/Collision Repair . . . . .	163	Journalism . . . . .	221
Automotive Service Technology . . . . .	164	Library . . . . .	222
Biology . . . . .	175	Manufacturing Engineering Technology . . . . .	225
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Business Technology . . . . .	177	Mathematics . . . . .	227
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Communication Studies . . . . .	183	Microelectronics Systems Technology . . . . .	249
Computer Science . . . . .	183	Music . . . . .	235
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Cooperative Work Experience . . . . .	187	Nursing . . . . .	239
Criminal Justice . . . . .	179	Occupational Skills Training . . . . .	242
Dental Assistant . . . . .	187	Philosophy . . . . .	243
Digital Media Communications . . . . .	189	Physical Education . . . . .	242
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Economics . . . . .	191	Political Science . . . . .	245
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Electronic Systems Technology . . . . .	194	Religion . . . . .	246
Emergency Management Professional . . . . .	195	Renewable Energy Technology . . . . .	246
Emergency Medical Technology . . . . .	197	Search and Rescue . . . . .	247
Engineering . . . . .	200	Small Business Management . . . . .	248
English as a Second Language . . . . .	201	Social Science . . . . .	250
English Literature . . . . .	197	Sociology . . . . .	249
Environmental Safety & Health . . . . .	201	Spanish . . . . .	250
Environmental Science . . . . .	203	Study Skills . . . . .	195
Fire Science (Wildland) . . . . .	204	Theatre Arts . . . . .	251
Fire Science Technology . . . . .	207	Transportation & Logistics . . . . .	252
First Year Experience (FYE) . . . . .	207	Uncrewed Aircraft Systems . . . . .	253
Food & Nutrition . . . . .	203	Water & Environmental Technology . . . . .	253
French . . . . .	203	Welding Technology . . . . .	255
General Education Development . . . . .	208	Women's Studies . . . . .	259
General Science . . . . .	211	Workshop: Citizen Preparation . . . . .	259
Geographic Information Systems . . . . .	209	Workshop: Manufacturing . . . . .	259
Geography . . . . .	209	Workshop: Theatre Arts . . . . .	259
Geology . . . . .	208	Workshop: Water & Environmental Technology . . . . .	259
German . . . . .	209	Workshop: Welding . . . . .	260
Gerontology . . . . .	211	Writing . . . . .	257
Health . . . . .	213	Writing-Reading Skills . . . . .	258
Health & Fitness . . . . .	218	Zoology . . . . .	260

**AB****Auto Body/Collision Repair****AB-101 Auto Restoration**

3 credits, Fall/Winter/Spring/Summer  
Designed for students interested in auto body repair and painting their own vehicles. Includes dent removal, panel replacement, welding and painting. May be repeated for up to 12 credits.

**AB-105 Street Rod Construction Techniques**

3 credits, Fall/Winter/Spring/Summer  
In this course, students will learn panel forming, welding, basic body work and repair of individual projects. Includes shop safety, chemical hazard safety, proper and safe use of tools, basic metal work and finishing, and paint preparation and application.

**AB-106 Basic Metalforming**

2 credits, Not Offered Every Term  
Instruction in basic metalforming techniques used in the fabrication of replacement or modified parts used in the construction of automobiles, motorcycles, aircraft, and metal sculpture. Includes shop safety.

**AB-112 Collision Repair Welding I**

2 credits, Fall/Winter/Spring  
This class focuses on auto collision damage repair. Emphasis is on Metal Inert Gas (MIG), Gas Metal Arc Welding (GMAW), welding on light gauge metals, and oxygen-acetylene cutting.

**AB-113 Collision Repair I/Nonstructural**

6 credits, Fall/Winter/Spring  
Provides basic instruction in collision repairs, including shop safety and chemical hazard safety; proper and safe use of tools; basic metal work and finishing; use of filler; door removal, replacement and alignment; and replacement and alignment of bolt-on front end sheet metal parts. Prerequisite or Corequisite: AB-112 and ABR-125.

**AB-123 Collision Repair Welding II**

2 credits, Fall/Winter/Spring  
Training in light gauge metal repair: Gas Metal Arc Welding (GMAW), Plasma Arc Cutting (PAC), Squeeze Type Resistance Spot Welding (ST-RSW), and other advanced welding techniques specific to collision damage repair. Prerequisites: AB-112.

**AB-133 Collision Repair II/Structural**

6 credits, Fall/Winter/Spring  
Repair major body damage using modern frame repair equipment. Includes repair and replacement of bolt-on, bonded, and welded components using the latest technology. Includes introduction to computerized measuring and damage analysis. Prerequisites: AB-113.

**AB-149 Collision Repair Estimating I**

2 credits, Fall  
This course provides instruction in procedure and terminology used in the collision repair estimating field. Body part component identification and the effects of a collision on a vehicle will be studied.

**AB-150 Collision Repair Computerized Estimating - Audatex**

2 credits, Winter  
Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on Audatex software. Prerequisites: AB-149.

**AB-151 Collision Repair Computerized Estimating - CCC ONE**

2 credits, Spring  
Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on CCC ONE software. Prerequisites: AB-149.

**AB-222 Collision Repair III/Advanced Structural**

6 credits, Fall/Winter/Spring  
Major collision repair with a systems approach: frame and structure, panels, suspension and brakes, electrical and cooling systems. Emphasis on frame and unibody repair, replacement of welded body panels, and diagnosis and repair of related damage. Prerequisites: AB-133.

**AB-224 Collision Repair IV/Advanced Structural**

6 credits, Fall/Winter/Spring  
Advanced frame and Unibody repair procedures. Electronic measurement and dimensioning, repair documentation, brakes, suspension, and alignment as they relate to collision repair. Prerequisites: AB-222.

**AB-226 Collision Repair V/Advanced Structural**

6 credits, Fall/Winter/Spring  
Uses the latest high quality, productive techniques and equipment to repair vehicles to pre-collision condition. Covers the refined collision repair processes for today's workplace. Prerequisites: AB-224.

**AB-235 Collision Repair Welding III**

2 credits, Fall/Winter/Spring  
Aluminum welding for collision damage repair. Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW) processes are learned, along with related weld techniques and equipment/safety procedures. Prerequisites: AB-123.

**AB-280 Collision Repair/CWE**

2-6 credits, Fall/Winter/Spring  
Cooperative work experience. Work-based learning experience in an auto body repair shop. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**ABE****Adult Basic Education (ABE)****ABE-012 Adult Basic Education**

0 credits, Fall/Winter/Spring/Summer  
Instruction offered to improve reading, writing, and math skills in order to transition to college classes, GED preparatory classes, or career related goal. Students must be 16 years or older. Required: Student Petition.

**ABE-080 ESL Tutoring**

0 credits, Fall/Winter/Spring/Summer  
Adult students meet one-on-one or in a small group with a tutor to focus on specific learning needs. The sessions are held in various public places throughout Clackamas County, such as libraries, schools, churches and the college campuses and outreach sites. Tutors help set student goals and a plan of learning. This class is a supplement to other ESL, ABE, or GED classes. Required: Student Petition.

**ABR****Auto Body/Collision Refinishing****ABR-125 Collision Repair/Refinishing I**

6 credits, Fall/Winter/Spring  
Covers shop safety, fire prevention, selection and use of paint products, abrasives, fillers, basic application of primers, sealers, and top coats. Prerequisite or Corequisite: AB-112 and AB-113.

**ABR-127 Collision Repair/Refinishing II**

6 credits, Fall/Winter/Spring

Application of solvent and water-borne finishes, including spot repairs, color matching, complete refinishing, and problem solving. Introduction to computerized color information retrieval and mixing. Prerequisites: ABR-125.

**ABR-129 Collision Repair/Refinishing III**

6 credits, Fall/Winter/Spring

Application of solvent and water-borne basecoats and tri-coats and urethane topcoats, using both foreign and domestic refinish systems. Includes complete refinishing, spot and panel painting, color matching and problem solving. Prerequisites: ABR-127.

**ABR-152 Custom Painting Fundamentals**

2 credits, Spring

Custom color application and special effects. Covers personal protection, shop safety, environmental concerns, product choice and compatibility, selection and use of masking materials, and color harmony.

**ABR-225 Production Shop Techniques**

6 credits, Fall/Winter/Spring

Designed for students who wish to gain additional hands-on experience in refinishing, using the most up-to-date methods and materials. Prerequisites: ABR-129.

**ABR-227 Restoration Practices**

6 credits, Fall/Winter/Spring

Designed for students who wish to broaden their skills base in the upper end refinish market. Projects will be considerably more challenging, with standards and expectations set higher. Prerequisites: ABR-225.

**AM****Automotive Service Technology****AM-100 Automotive Fundamentals**

3 credits, Fall/Winter/Spring/Summer

An introductory automotive service class intended to provide fundamental knowledge and basic experience about automobiles. Covers automotive systems, preventive maintenance and performing basic repairs. Also provides skill and knowledge for purchasing cars, choosing quality mechanics, and making good economic decisions about repairs and costs. Intended generally to enhance the overall satisfaction of being an automotive consumer and car owner.

**AM-106 Fix Your Own Car**

2 credits, Not Offered Every Term

A do-it-yourself course for students who want to work on their own cars. Includes: oil change, lubrication, fluid checks, brakes, cooling system, electrical system, safety, and other quick services. May be repeated for up to 12 credits.

**AM-118 Small Engine Repair**

3 credits, Fall/Winter/Spring/Summer

This course is designed to provide an overview of basic small engine maintenance, operation and repair. It covers safety, small engine theory, electrical systems, and troubleshooting. Classroom instruction covering theory of operation, 2 cycle and 4 cycle designs and applications, combined with hands-on live projects provides the student the opportunity to learn basic principles of small engine operation, including outdoor equipment, motorcycles, and A.T.V.'s.

**AM-121 General Auto Repair I**

3 credits, Fall/Winter/Spring

In this course students will experience working in an auto shop/lab as they repair customer vehicles. They will apply concepts such as shop and personal safety, tools and their usage, and customer service as they develop workplace employability skills and work habits. Recommended: 1st term students seeking the AAS degree in Automotive Service Technology should meet with instructor prior to the beginning of the term.

**AM-122 General Auto Repair II**

3 credits, Fall/Winter/Spring

Course material is coordinated with other auto courses. Includes live repair work and fundamentals such as safety, tools, measuring, and fasteners. For second term automotive students. Prerequisites: AM-121.

**AM-129 Electrical Systems**

7 credits, Fall

This course covers general electrical system diagnosis; battery diagnosis and service; starting system diagnosis and repair; charging system diagnosis and repair; lighting systems diagnosis and repair. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

**AM-130 Brake Systems**

7 credits, Fall

Theory and lab course covers basic hydraulics, brake fluids, friction materials, seals, disc and drum brakes, disc and drum brake servicing equipment, hydraulic and vacuum brake boosters and anti-lock brake systems. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

**AM-131 Chassis Systems**

7 credits, Winter

A theory and lab course covering the design, construction, service, and repair of front and rear suspension systems, wheels and tires, steering systems, and alignments. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

**AM-133 Engine Systems**

7 credits, Spring

This course is designed to provide students with the entry-level skills necessary to repair automobile engines. Includes general engine diagnosis; cylinder head and valve train diagnosis and repair; engine block assembly diagnosis and repair; and lubrication and cooling systems diagnosis and repair. Recommended: MTH-020 or placement in MTH-050, WRD-080 or placement in WRD-090.

**AM-175 Advanced Mechanic Studies I**

3 credits, Fall/Winter/Spring

Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Student Petition. Required: Second year Automotive Service Degree student or be previously enrolled in the Automotive Program. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, and AM-245. Recommended: Work independently with minimal help.

**AM-185 Advanced Mechanic Studies II**

3 credits, Fall/Winter/Spring

Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Student Petition. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, and AM-245.

**AM-195 Advanced Mechanic Studies III**

3 credits, Fall/Winter/Spring

Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Student Petition. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, and AM-245.

**AM-223 Hybrid Service Technology**

3 credits, Fall/Winter/Spring

Provides students with knowledge of theory and physical description of hybrid vehicles. The student will have the opportunity to acquire practical experience in the area of diagnosing and repairing hybrid vehicles. Prerequisites: AM-244.

**AM-224 Comfort Systems**

4 credits, Spring

This course covers design, construction, testing, maintenance, and repair of automotive heating and air conditioning systems. Prepares a student to take the Section 609 Environmental Protection Agency certification test. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

**AM-228 Service Shop Management**

4 credits, Spring

Course designed to familiarize students with the responsibilities of the parts manager, service manager and service writer and the day to day responsibilities of operating a business. Prerequisites: MTH-020 with a C or better, or placement in MTH-050 or higher.

**AM-235 Power Transmission Systems**

7 credits, Spring

Covers construction, operation, service and repair of clutches, manual transmission, U-joints, drive lines, final drives, overdrive, and four wheel drives.

**AM-243 Fuel & Emission Control Systems**

7 credits, Winter

Covers service of fuel storage and delivery systems: fuel injection, emission controls, and other electronic engine controls. Includes DSO use and exhaust gas analysis. Prerequisites: AM-129 with a C or better.

**AM-244 Advanced Electrical Systems**

7 credits, Winter

This course includes electronic and computer fundamentals, general electrical system diagnosis, instrument cluster and driver information systems diagnosis and repair, body electrical systems diagnosis and repair. Prerequisites: AM-129 with a C or better.

**AM-245 Automatic Transmission Systems**

7 credits, Fall

This course covers the theory and physical description of the automatic transmission. The student will have the opportunity to acquire practical experience and learn the proper procedures for overhaul and service. Prerequisites: AM-129 with a C or better.

**AM-280 Auto Mechanics/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Work-related learning experience in an auto repair shop or auto dealership. Variable Credit: 1-6 credits. Required: Student Petition. Corequisites: CWE-281.

**ANT****Anthropology****ANT-101 Physical Anthropology**

4 credits, Fall/Winter/Spring

Introduces the study of humans as biocultural beings in the context of modern genetics, evolutionary theory, primate taxonomy, anatomy and behavior, fossil hominines, and the role of the physical anthropologist in forensic science. Recommended: WRD-090 or placement in WRD-098.

**ANT-102 Archaeology & Prehistory**

4 credits, Fall/Winter/Spring

Introduces the methods and theories used by archaeologists to study the development of human cultures. Provides a survey of world prehistory, tracing the transition of human societies from hunting and gathering to farming, to the beginning of urban life and the rise of early civilizations. Recommended: WRD-090 or placement in WRD-098.

**ANT-103 Cultural Anthropology**

4 credits, Fall/Winter/Spring/Summer

Introduces the diversity of contemporary human cultures and the ways anthropologists study and compare them in an effort to understand how different societies organize their lives and make sense of the world around them. Explores the interrelationships among the various elements of culture. Recommended: WRD-090 or placement in WRD-098.

**ANT-231 Native Americans of the Pacific Northwest**

4 credits, Not Offered Every Term

Survey of Native American cultures in the Pacific Northwest region from prehistoric times to the present. Course is based on archaeological, ethno-historical, and ethnographic evidence. Includes contemporary issues in Northwest Native American life. Recommended: WRD-090 or placement in WRD-098.

**ANT-232 Native Americans of North America**

4 credits, Not Offered Every Term

A broad survey of the cultures, arts, and history of Native Americans north of Mexico. Uses archaeological, ethno-historical, and ethnographic evidence to explore the diversity of Native American cultures from prehistoric times to the present. Includes contemporary issues in Native American life. Recommended: WRD-090 or placement in WRD-098.

**ANT-280 Anthropology/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of anthropology (may involve physical anthropology, and/or archaeology, and/or cultural anthropology). Variable Credit: 2-6 credits. Required: Student Petition. Recommended: WRD-090 or placement in WRD-098. Corequisites: CWE-281.

**ART****Art****ART-100A Jewelry Making Techniques**

1 credit, Not Offered Every Term

Various topics will introduce techniques in: construction, forming, fabrication, soldering, inlay, etching, mold making, casting, stone setting, chain making and silversmithing. Students will be encouraged to create and design their own jewelry with both meaning and function. Historical and contemporary issues surrounding jewelry and body adornment will be presented and discussed during the course. May be repeated for up to 3 credits.

**ART-101 Art Appreciation**

3 credits, Fall/Winter/Spring

Discover the fundamentals of thinking about and creating art through readings, class discussions, and gallery/museum tours. This course will examine art, architecture and design from the ancient period through the contemporary moment. The course also considers connections and relationships in art-making, history and culture.

**ART-115 Basic Design: 2-Dimensional Design**

4 credits, Fall/Winter/Spring

This course acquaints students with the vocabulary of composition and the elements and principles of design and color theory. Students focus on the development of creative compositions and analytical skills through projects and critiques and examine historical and contemporary issues and ideas related to visual composition.

**ART-116 Basic Design: Color Theory & Composition**

4 credits, Not Offered Every Year

Explore the use of color in art. Create charts, paintings and collages that investigate the elements, principles and theory of color. Examine historical and contemporary issues and ideas of color and composition in the arts.

**ART-117 Basic Design: 3-Dimensional Composition**

4 credits, Spring

Examine the elements of form, space, structure, and sculpture. Create works of art using various sculptural processes. Examine historical and contemporary issues and ideas relating to sculpture and 3-dimensional design.

**ART-119 Time-Based Art**

4 credits, Winter

This course introduces students to working with time as a medium, concept, and process. Introduces the strategies, practices, and history of the time-based art including storytelling, performance, body art, animation, video, and sound. Students develop abilities in producing, documenting, and presenting these works.

**ART-120 Creativity/Ideation**

2 credits, Not Offered Every Term

Have a great idea, want to further explore your ideas and creativity? Experience the process of generating ideas and developing creative problem-solving strategies. This course includes experimentation, collaboration, non-traditional methods and psychological aspects of creating and synthesizing ideas. This course is not just for artists, it is for everyone who wants to develop an idea.

**ART-121 Digital Tools**

2 credits, Winter

An introductory course that explores digital systems that artists and designers use to see, process and communicate in a quickly changing world. Pocket technology, online journaling and social media will be utilized to present the development of a personal aesthetic and encourage a daily art practice. Emphasis on ways to personalize the digital experience and streamline creative output. Projects and critiques will introduce students to the principles of design as a vocabulary to discuss work and solve visual problems. Group discussions will focus on clarifying visual communication and engaging with diverse audiences effectively.

**ART-131 Introduction to Drawing**

4 credits, Fall/Winter/Spring

Introduces basic skills, drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Projects will involve observational drawing of figure, still life and landscape images. Assignments include drawing, assigned readings, term papers and group critiques of drawing projects. Historical issues of drawing will be examined.

**ART-161 Photography I**

3 credits, Fall/Winter/Spring

Introduction to basic camera operation and basic darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Required: Access to a 35mm black and white camera with adjustable exposure controls (no digital cameras).

**ART-162 Photography II**

3 credits, Winter/Spring

This course is the second of a sequence of three darkroom photography courses. This course explores camera operation and darkroom processes in developing and printing film. Photography II explores the photo processes and elements of composition, content, and historical/contemporary references at an intermediate level. Required: Access to a 35mm black and white camera with adjustable exposure controls (no digital cameras). Prerequisites: ART-161.



**ART-197 Gallery Design & Management**

3 credits, Not Offered Every Term

Introduction to the fundamental goals and methodology of managing a visual arts gallery. This course examines issues of contemporary art while providing practical experience in curating, preparation and installation of exhibitions, fund raising, grant writing, public relations and related gallery objectives.

**ART-204 History of Art/Ancient Through Medieval**

4 credits, Fall

Examines art, cultures, and history from the Paleolithic era through the early Medieval eras. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Recommended: WRD-098 or placement in WR-121.

**ART-205 History of Art/Romanesque Through Baroque**

4 credits, Winter

Examines art, culture, and history from the Romanesque through the Baroque periods in art. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, discussions, papers and exams. Recommended: WRD-098 or placement in WR-121.

**ART-206 History of Art/Enlightenment Through Contemporary**

4 credits, Spring

Examines art, culture, and history from the Enlightenment through the current century. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Recommended: WRD-098 or placement in WR-121.

**ART-225 Computer Graphics I**

3 credits, Fall/Winter

Introduction to the use of digital graphics programs. Photo manipulation, illustration, and compositing techniques will be explored. Design principles and creative composition will be emphasized. Historical and contemporary issues related to graphic design aesthetics will be considered. Recommended: ART-115.

**ART-226 Computer Graphics II**

3 credits, Spring

Continue exploring the processes of digital graphics programs. More advanced aspects of image compositing, bit mapping, layering, and using channels in Photoshop. More advanced aspects of vector graphics creation and document creation in Illustrator and InDesign. Creative problem solving, design applications and contemporary issues will be explored. Historical reference and current trends in digital media will continue to be examined. Recommended: ART-225.

**ART-227 Computer Graphics III**

3 credits, Spring

Advanced use of multi-digital formats to create images, compositions and documents. Develop a design portfolio. Design principles, creative problem solving, historical and contemporary issues in graphics and aesthetics will be analyzed. Recommended: ART-225 and ART-226.

**ART-232 Life Drawing (Figure Emphasis)**

4 credits, Winter

Develop drawing skills, tools, materials, techniques, elements of composition; line, gesture, and value. Direct observation of reality in relation to volume and form drawn onto a two-dimensional plane with a focus on the human form. Assignments include drawing, assigned readings and group critiques of drawing projects. Prerequisites: ART-131 or Student Petition.

**ART-233 Drawing for Comics**

4 credits, Spring

Introduces basic drawing skills, drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Projects will involve drawing with a focus on sequential imagery, comics and graphic style. Assignments include drawing, assigned readings and group critiques of drawing projects. This course emphasizes composition, expression and text-related imagery. Prerequisites: ART-131 or Student Petition.

**ART-250 Ceramics/Beginning**

4 credits, Fall/Winter/Spring

This course is a broad general introduction to fundamental ceramic skills and clay experience to foster artistic growth. Students explore different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel and are introduced to glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

**ART-251 Ceramics/Hand-Building I**

4 credits, Winter/Spring

This course is a hand-building focused introduction to fundamental ceramic skills and clay experience to foster artistic growth. Students explore different methods of working with clay, including pinching, coiling, and slab construction and are introduced to glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

**ART-252 Ceramics/Wheel-Throwing I**

4 credits, Winter/Spring

This course is an introduction to ceramic wheel-throwing methods through the creation of functional and artistic forms to develop fundamental skills and clay experience and foster artistic growth. Students are introduced to glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

**ART-253 Ceramics/Intermediate**

4 credits, Fall/Winter/Spring

In this course, students further develop ceramic skills and clay experience to foster artistic growth. Students explore and develop different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel and refine glazing and firing methods. Students research the history of ceramics and its connection to culture and society. Prerequisites: ART-250, ART-251, or ART-252, or Student Petition.

**ART-254 Ceramics/Hand-Building II**

4 credits, Winter/Spring

This course continues the development of ceramic hand-building methods through the creation of functional and artistic forms to develop skills and clay experience and foster artistic growth. Students explore glazing and firing methods. Students research the history of ceramics and its connection to culture and society. Prerequisites: ART-251 or Student Petition.

**ART-255 Ceramics/Wheel-Throwing II**

4 credits, Winter/Spring

This course continues the development of ceramic wheel-throwing methods through the creation of functional and artistic forms to develop skills and clay experience and foster artistic growth. Students explore glazing and firing methods. Students research the history of ceramics and its connection to culture and society. Prerequisites: ART-252 or Student Petition.

**ART-257 Metalsmithing/Jewelry**

4 credits, Not Offered Every Term

This course examines basic techniques in metalsmithing and jewelry-making. Students will learn basic techniques and processes of metalsmithing such as sawing, cold connection, soldering, metal inlay, fabrication, forming, surface treatments and casting. The focus of this class will be placed on creating forms for body adornment. Critiques, discussions and presentations are included in this course.

**ART-261 Photography III**

3 credits, Not Offered Every Term

This course is the third of a sequence of three darkroom photography courses. This course explores camera operation and darkroom processes in developing and printing film. Photography III explores the photo processes and elements of composition, content, and historical/ contemporary references at an advanced level. Required: Access to a 35mm black and white camera with adjustable exposure controls (no digital cameras). Prerequisites: ART-161 and ART-162.

**ART-262 Digital Photography & Photo-Imaging**

3 credits, Fall/Winter/Spring

Introduces concepts, techniques, practices, aesthetics and ethics of photographic imaging and image-making with digital technology. Students will use imaging software. Required: Access to a digital camera with adjustable exposure controls.

**ART-280 Art/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of art. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**ART-281 Painting: Still Life/Beginning**

4 credits, Fall

Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Projects will involve observational painting with a focus on Still Life and its relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects.

**ART-282 Painting: The Figure/Beginning**

4 credits, Winter

Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Direct observation of reality in relation to volume and form on a two-dimensional plane with a focus on the human form. Assignments include painting, readings and critique of projects.

**ART-283 Painting: Landscapes/Beginning**

4 credits, Spring

Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Projects will involve observational painting with a focus on landscape and its relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects.

**ART-284 Painting: Still Life/Intermediate**

4 credits, Fall

Utilizes intermediate painting concepts, materials and techniques, with emphasis on composition, color, gesture, and value. Projects will involve observational painting with a focus on Still Life and its relationship to volume and form on a two-dimensional plane. Assignments include paintings, readings, and critique of projects. Prerequisites: ART-283 or Student Petition.

**ART-285 Painting: The Figure/Intermediate**

4 credits, Winter

Utilizes intermediate painting concepts, materials and techniques with emphasis on composition, color, gesture and value. Projects will involve observational painting with a focus on the human form and its relationship to volume and form on a two-dimensional plane. Assignments include paintings, readings, and critique of projects. Prerequisites: ART-283 or Student Petition.

**ART-286 Painting: Landscapes/Intermediate**

4 credits, Spring

Utilizes intermediate painting concepts, materials and techniques with emphasis on composition, color, gesture and value. Projects will involve observational painting with a focus on landscape and its relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects. Prerequisites: ART-283 or Student Petition.

**ART-291 Sculpture**

4 credits, Fall

Introduction to the processes and concepts of sculpture; the elements of form and space will be explored. Clay, plaster, mold making, carving, and assemblage will be introduced. Reference to historical and aesthetic content will be presented.

**ART-292 Sculpture (Figure Emphasis)**

4 credits, Winter

Explores the human form in traditional and contemporary techniques and concepts. Use of clay, armatures, combining mediums, flexible molds and other sculpture media will be explored. Concepts of aesthetics in formal composition will be explored through projects, lectures, and critiques. The human figure and other life forms in the history of sculpture will be examined.

**ART-293 Sculpture (Metal Emphasis)**

4 credits, Spring

The processes and concepts of sculpture including the elements of form, space and visual communication will be examined with emphasis on current issues. Use of clay and plaster in relation to metal sculpture. Welding, casting, and assemblage will be explored. Historical and contemporary ideas and aesthetic content will be examined.

**ART-297 Professional Practices and Artist's Skills**

3 credits, Not Offered Every Term

Professional practices relevant to emerging artists' careers. Lecture format includes resume and portfolio preparation, developing resources and community connections, gaining exposure and representation for artwork, creating publicity, basic marketing and exhibition strategies, presenting and installing art work, business concerns, art market dynamics, art collecting. Field trips to local galleries and/or guest lectures. Recommended: WR-121.

**ASC****Arts & Sciences****ASC-175 Integrated Science Inquiry**

4 credits, Fall

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included: Evolution: the Idea that Shocked the World, the People and Animals of Africa, and the Lewis and Clark Expedition. Recommended: WRD-098 or placement in WR-121.

**ASC-176 Integrated Science Inquiry**

4 credits, Winter

An introductory lab science course for liberal arts majors in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Human Evolution, Diseases of Africa and the Lewis and Clark Expedition. Recommended: WRD-098 or placement in WR-121.

**ASC-177 Integrated Science Inquiry**

4 credits, Spring

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Evolution & Contemporary Issues, Africa, and the Lewis and Clark Expedition. Recommended: WRD-098 or placement in WR-121.

**ASE****Adult Secondary Education****ASE-010 Basic Math**

0 credits, Fall/Winter/Spring/Summer  
Math concepts: addition, subtraction, multiplication, and division of whole numbers; fractions and decimals; percentage; measurement; graphs; ratio and proportion; and basic principles of algebra and geometry. Course is geared to those students who need a slower-paced approach. Elective credit only for high school diploma requirement. May be repeated for up to 1.5 high school credits. Required: Student Petition.

**ASE-011 Applied Math I**

0 credits, Fall/Winter/Spring/Summer

Presents the use of the numbers and operations of arithmetic; basic algebra and geometry are integrated throughout the course. The use of technology is integrated throughout the course. A scientific calculator is required for the course.5 high school credit. Required: Student Petition.

**ASE-012 Applied Math II**

0 credits, Fall/Winter/Spring/Summer

Continues operations of arithmetic, basic algebra and geometry. Introduces polynomial expressions, linear equations and inequalities, graphing, and the coordinate plane. The use of technology is integrated throughout the course. A scientific calculator is required for the course.5 high school credit. Required: Student Petition.

**ASE-015 Basic English**

0 credits, Fall/Winter/Spring/Summer

Review of English fundamentals of grammar, spelling, capitalization, and punctuation through English literature and writing. Builds a better understanding of audience and purpose for writing. May be repeated for up to 1.5 high school credits. Required: Student Petition.

**ASE-016 Intermediate English**

0 credits, Fall/Winter/Spring/Summer

Review instruction in standard written English with emphasis on paragraph construction and editing. Includes practical applications of complex sentence patterns, subject and verb agreement, ownership, writing development, and other writing skills. May be repeated for up to 1.5 high school credits. Required: Student Petition.

**ASE-017 Advanced English**

0 credits, Fall/Winter/Spring/Summer

Language arts course covering English literary analysis, strategies to improve comprehension and writing skills. Addresses a variety of writing modes including creative, descriptive, expository and persuasive. Builds on strategies for reading, writing and editing. May be repeated for up to 1.0 high school credit. Required: Student Petition.

**ASE-020 Literature I**

0 credits, Fall/Winter/Spring/Summer  
Course focuses on literature from US History from the American Indians to present day. Literature is linked to significant historical events and gives insight to the authors' mindsets. Addresses how literature facilitates understanding of political, economic, and religious forces. Required: Student Petition.

**ASE-021 Effective Study Skills**

0 credits, Fall/Winter/Spring/Summer  
Emphasizes practical study skills for college students. Strategies for organizing study materials and time, remembering information, studying textbooks and taking lecture notes will be applied. Methods of preparing for tests, taking tests, and managing on-line course components such as Moodle are addressed. Required: Student Petition.

**ASE-026 Health I**

0 credits, Fall/Winter/Spring/Summer  
Presents issues impacting psychosocial health; addresses lifestyle choices and strategies to evaluate long term positive and negative impacts on health. Required: Student Petition.

**ASE-028 Global Studies I**

0 credits, Fall/Winter/Spring/Summer  
Focuses on geographic factors that contribute to patterns of human settlement and economic development. Required: Student Petition.

**ASE-029 Global Studies II**

0 credits, Fall/Winter/Spring/Summer  
Focuses upon examination, prediction, and critical evaluation of the interrelationships of human and physical geographies of Europe, Asia, Africa and Australia. Required: Student Petition.

**ASE-032 U.S. History I**

0 credits, Fall/Winter/Spring/Summer  
Focuses on the settlement of America to the Great Depression, emphasizing the development of economic, political, and social systems. Analyzes causes and effects of wars and policies, and examines the growth of technology. Emphasizes the use of evidence to evaluate historical events and trends. Required: Student Petition.

**ASE-033 U.S. History II**

0 credits, Fall/Winter/Spring/Summer  
Focuses on the societal issues, trends, and events of US history from World War II to the present including the Cold War, civil rights movement, Vietnam War, and terrorism. Analyzes causes and effects of wars and domestic and foreign policy, and examines the growth of technology. Required: Student Petition.

**ASE-034 Government I**

0 credits, Fall/Winter/Spring/Summer  
Introduces the basic principles of American government, including the branches of federal, state, and local government and how they interact. Explores foundational documents, and applies concepts to contemporary issues. Explores roles of government as they apply to foreign and domestic policies and policy shifts. Required: Student Petition.

**ASE-035 Career Exploration I**

0 credits, Fall/Winter/Spring/Summer  
Explores student role models, personal strengths and weaknesses, factors influencing workplace satisfaction, online occupational sorters, training, and earning. Presents job search, acquisition, and retention strategies; defines appropriate workplace behaviors, and analyzes workplace problems in context. Required: Student Petition.

**ASE-036 Personal Finance I**

0 credits, Fall/Winter/Spring/Summer  
Presents skills to promote realistic financial decisions regarding personal income and career planning, budgeting and saving, shopping and consumption, banking and credit, investing, and rights and responsibilities in the marketplace. Required: Student Petition.

**ASE-037 Basic Developmental Reading**

0 credits, Fall/Winter/Spring/Summer  
Develops basic reading skills, including word parts, pronunciation, spelling, basic vocabulary, and comprehension skills. Employs strategies to assist students in becoming more proficient readers. Elective high school credit in the AHSD program. May be repeated for up to 1.5 high school credits. Required: Student Petition.

**ASE-038 Intermediate Reading**

0 credits, Fall/Winter/Spring/Summer  
This course builds on word attack vocabulary, spelling, and reading comprehension skills to improve basic reading fluency and reading strategies. Introduces genre and focuses on academic texts. Required: Student Petition.

**ASE-039 Advanced Reading**

0 credits, Fall/Winter/Spring/Summer  
Develops advanced vocabulary, reading comprehension skills, critical reading, and study skills. Explores reading in various genres including drama, poetry, fiction and non-fiction. Required: Student Petition.

**ASE-042 Job Skills Competency Lab**

0 credits, Fall/Winter/Spring/Summer  
Provides overview of college and career processes and expectations including cooperative work experience for employed high school students to earn elective credit. Focuses on appropriate work and college behaviors, decision making techniques, communication skills, and teamwork. May be repeated for up to 2 high school credits. Required: Student Petition.

**ASE-046 Human Development**

0 credits, Not Offered Every Year  
Provides instruction in the areas of parent education and life skills targeted to the issues of teen parents and high school students. This course will assist students in developing positive parenting skills, understanding of child development, appropriate practices for various developmental stages, building self-esteem, improving personal communication skills and developing survival skills. This course carries high school level credit only. May be repeated for up to 2 high school credits. Required: Student Petition.

**ASE-047 Physical Education I**

0 credits, Fall/Winter/Spring/Summer  
Presents a broad perspective of sports activities including team cooperation. Explores the significance of sports in a variety of cultures. Analyzes rules, procedures, and practices that are safe and effective for specific activities. Explore the relationship between fitness and personal health goals. Set fitness goals and monitor progress. Required: Student Petition. This course carries high school credit only.

**ASE-054 American Civics II**

0 credits, Fall/Winter/Spring/Summer  
Presents basic principles and ideals embedded in American democracy. Examines power, authority, government and public with relation to American ideals and the roles, rights, and responsibilities of citizens. Explores founding concepts and structures of American government including changing and managing the constitution. Required: Student Petition.

**ASE-056 Personal Finance II**

0 credits, Fall/Winter/Spring/Summer  
Explores personal finance related to types of loans, debt, large purchases, taxes, insurance, investments, financial careers, and retirement. Required: Student Petition. Prerequisite or Corequisite: ASE-057.

**ASE-057 Careers II**

0 credits, Fall/Winter/Spring/Summer  
Explores positive work ethics, personal qualities, people skills, workplace documents, problem solving, time management, and telecommunication devices. Required: Student Petition. Corequisites: ASE-056.

**ASE-058 Physical Education II**

0 credits, Fall/Winter/Spring/Summer  
Presents a broad perspective of physical fitness including how to pursue and maintain a health enhancing level of physical fitness. Identifies the basic principles of fitness development, and how fitness and sports impact other cultures. Required: Student Petition. This course carries high school level credit only.

**ASE-059 Health II**

0 credits, Fall/Winter/Spring/Summer  
Builds on concepts of ASE-026, Health I. Provides a more in-depth examination of the behaviors that pose a threat to a healthy living. Further practice evaluating positive choices for long term physical, mental and emotional health. Required: Student Petition.

**ASE-061 General Science/Frogs**

0 credits, Fall/Winter/Spring/Summer  
Presents principles of diversity and interdependence of life, anatomy and physiology, and animal structure and function through virtual dissection. Required: Student Petition.

**ASE-062 Science/Desert Ecology**

0 credits, Fall/Winter/Spring/Summer  
Presents principles of desert ecology. Explores how organisms interrelate and adapt to life in desert environments, how deserts are formed, and human impact on deserts. Required: Student Petition.

**ASE-063 General Science/Wetlands**

0 credits, Fall/Winter/Spring/Summer  
Presents principles of the plant and animal kingdom in virtual wetlands. Explores organisms, classification systems, and processes, within wetland ecosystems. Required: Student Petition.

**ASE-066 Technology I**

0 credits, Fall/Winter/Spring/Summer  
Focuses on the use of computers, understanding their structure and components, and word processing skills needed for academic environments. Required: Student Petition.

**ASE-067 Technology II**

0 credits, Fall/Winter/Spring/Summer  
Focuses on the use of technology in academic and career areas. Provides students hands on experience working with spreadsheets, databases, presentations, and computer applications. Required: Student Petition.

**ASE-068 Literature II**

0 credits, Fall/Winter/Spring/Summer  
Focuses on literature from 1850-present. Addresses written works and masterpieces emphasizing themes found throughout US history. Ties literature to national history to better understand political, economic, and religious forces influencing readers and authors. Required: Student Petition.

**ASE-069 Studio Art II**

0 credits, Not Offered Every Year  
An overview and extension of basic design principles introduced in Studio Art I. Uses a variety of media including digital media to explore and expand concepts introduced in Studio Art I. Explores personal expression, feelings, and experiences. Analyzes well and lesser known works of art. Required: Student Petition. This course carries high school level credit only.

**ASE-071A Algebra 1A**

0 credits, Fall/Winter/Spring/Summer  
Algebra 1A explores the relationship between mathematical quantities, reasoning with equations and inequalities, graphing, functions and mathematical modeling. Required: Student Petition.

**ASE-071B Algebra 1B**

0 credits, Fall/Winter/Spring/Summer  
Algebra 1B reinforces concepts presented in Algebra 1A and introduces quadratic equations, parabolas, functions, and statistics related to data distributions. Required: Student Petition. Prerequisites: ASE-071A or equivalent.

**ASE-072A Algebra 2A**

0 credits, Fall/Winter/Spring/Summer  
Algebra 2A reinforces the concepts covered in the Algebra 1A and B sequence focusing on applications. Additionally, Algebra 2A introduces complex numbers. Required: Student Petition. Recommended: ASE-071A and ASE-071B or equivalent.

**ASE-072B Algebra 2B**

0 credits, Fall/Winter/Spring/Summer  
Algebra 2B reinforces the concepts presented in Algebra 1A and Algebra 2A. Additionally, Algebra 2B introduces basic trigonometric functions. Required: Student Petition.

**ASE-086 General Science/Birds**

0 credits, Fall/Winter/Spring/Summer  
Presents principles of general science such as scientific classification, evolution and natural selection, distinguishing fact from value, the scientific method, and current events and their correlation to historical events in science by learning about bird adaptations, origins, physiology, flight, migration, and current scientific cases. Required: Student Petition.

**ASE-087 Physical Science: Exploring the Rainforests**

0 credits, Fall/Winter/Spring/Summer  
Using virtual tours of the rainforest, students investigate the plant and animal life; animal characteristics; interdependence in an ecosystem; mechanisms in the biomass; and various types of rainforests. Required: Student Petition.

**ASL****American Sign Language****ASL-101 American Sign Language I**

4 credits, Fall

First term of a three-term introductory course. Everyday communication is the centerpiece of each lesson. Topics revolve around sharing information about ourselves and our environment. Grammar is introduced in context, with an emphasis on developing question and answering skills. Strategies are presented to help the student maintain a conversation. Recommended: WRD-098 or placement in WR-121.

**ASL-102 American Sign Language**

4 credits, Winter

Second term of a three-term introductory course. Emphasis will be on increasing communicative abilities. Course will focus on language functions such as making requests, describing others, and/or telling a short story. Grammar and vocabulary will also be emphasized throughout the course. Prerequisites: ASL-101 with a C or better.

**ASL-103 American Sign Language**

4 credits, Spring

Third term of a three-term introductory course. Emphasis will be on developing conversational competence. Course includes basic ASL vocabulary and grammar used for basic communication such as opening conversations, clarifying, giving reasons, narrating family history, correcting, and elaborating. Prerequisites: ASL-102 with a C or better.

**ASL-201 Second-Year American Sign Language I**

4 credits, Fall

Review and expansion of American Sign Language vocabulary and structure in order to perfect expressive skill. Emphasizes active communication in sign language. Prerequisites: ASL-103 with a C or better.

**ASL-202 Second-Year American Sign Language II**

4 credits, Winter

Continuation of ASL-201. Emphasizes active communication in sign language. Increased emphasis on exploring, analyzing the rules, and presenting stories and literature in sign language. Prerequisites: ASL-201 with a C or better.

**ASL-203 Second-Year American Sign Language III**

4 credits, Spring

Continuation of ASL-202. Emphasizes active communication in sign language. Increased emphasis on exploring, analyzing the rules, discussing, developing, and presenting literature and poetry in sign language. Prerequisites: ASL-202 with a C or better.

**BA****Business Administration****BA-101 Introduction to Business**

4 credits, Fall/Winter/Spring

Introduces the American business system in a changing global environment. Disciplines covered include economics, entrepreneurship, formation, accounting, finance, marketing, and management. Recommended: WRD-090 or placement in WRD-098.

**BA-103 Business Strategies for Computer Consultants**

3 credits, Not Offered Every Term

Class introduces the procedures for establishing and developing a successful consulting business in computer-related services including web development, network support, and computer support.

**BA-104 Business Math**

3 credits, Fall/Winter/Spring/Summer

Apply mathematics to a variety of transactions found in the business world, from finance to project management, and from sales to accounting, including: taxes, product or service mark-ups and mark-downs; simple and discounted interest; present and future value of a single sum of money and annuities; gains, losses, and valuations of stocks, bonds, mutual funds, and other investments; depreciation; inventory valuation; and financial ratio analysis. This course meets the Related Instruction Computation requirement. Prerequisites: MTH-020.

**BA-111 General Accounting I**

4 credits, Fall/Winter/Spring/Summer

Introduces the terminology and processes of full-cycle, modified cash and accrual basis bookkeeping for small service and merchandising businesses with inventory. Focus is on how to analyze and record financial transactions, reconcile accounts and trial balances, and prepare basic financial statements. Additional topics include cash management, bank reconciliations, accounting for sales and purchase discounts. Emphasizes procedure and practice. Recommended: Placement in MTH-020, and BA-101 and BA-104 with a C or better.

**BA-112 General Accounting II**

4 credits, Not Offered Every Term

Provides a more in-depth look at general accounting principles and practices for small business. Topics include recording bad debt, notes receivable and payable, inventory adjustment, and long-term asset valuation. Accounting practices for partnerships and manufacturing structures are examined and financial analysis as a tool for evaluating the health and wealth of a business is introduced. Prerequisites: BA-111.

**BA-119 Project Management Practices**

2 credits, Winter

Basic course in project management, intended for non-project management students. Students gain a basic understanding of project management principles and techniques, with emphasis on scope planning, scheduling, and resource management. Students learn practical application of cost control, time management, and communication in project environments.

**BA-120 Project Management Fundamentals**

4 credits, Fall/Winter/Spring

Foundational course in project management. Students gain an introduction to project management principles and techniques, including identifying project life cycle phases, generating a project charter, learning and applying stakeholder management techniques, generating work/task breakdowns, network diagrams and identifying the critical path. Students will also learn and apply risk management techniques, resource allocation, and project monitoring and controlling methodologies. Recommended: Working knowledge and access to MS Excel and MS Word.

**BA-122 Teamwork**

3 credits, Spring

Focuses on team dynamics and skills for achieving goals while working in a diverse group. Students complete a team project and in the process, practice successful communication strategies, goal definition, schedule coordination, peer feedback, and conflict management. Additional course topics include learning styles, diversity, appreciating differences, and ethical behavior in teams. Recommended: Working knowledge and access to MS Excel and MS Word.

**BA-123 Leadership & Motivation**

3 credits, Winter/Spring

Focuses on leadership-achieving organizational goals by employing human, financial, and organizational resources-and provides both a theoretical and a practical perspective on leadership and motivation skills. By engaging in both introspective and interactive exercises, students build the expertise necessary to lead both projects and organizations.

**BA-124 Negotiation**

3 credits, Spring

Approaches negotiation from both theoretical and practical perspectives, with an emphasis on successful integrative as well as ethical, negotiation techniques. Students engage in multiple one-on-one and team negotiation role plays and complete both pre- and post-negotiation analyses. Students also evaluate effective negotiations from the perspective of themselves and their peers through in-class debrief sessions.

**BA-125 Advanced Project Management Tools**

5 credits, Fall

Tools and processes employed in the project knowledge areas of project communication, risk, procurement, and quality. Major topics include project communication planning and preferred communication channels and approaches; risk assessment and risk management in a project environment; project procurement planning and management with an emphasis on contract types and contract awards and administration; and approaches to project quality planning, quality assurance, control and improvement. Prerequisite or Corequisite: BA-120.

**BA-126 Project Management: Workshop**

3 credits, Winter

In small teams, students will manage a simulated project, including overseeing schedule and resources, and reporting project status. As a final outcome, student teams submit a report and presentation that summarizes the project experience and lessons learned. Course tools include Microsoft Project, in which the student is expected to have prior training. Prerequisites: BA-120 and BA-125. Prerequisite or Corequisite: BT-177.

**BA-130 Leadership in Literature**

4 credits, Not Offered Every Year

Examines the nature of leadership by analyzing characters in major literary works. Recommended: WRD-098 or placement in WR-121.

**BA-131 Introduction to Business Computing**

4 credits, Fall/Winter/Spring/Summer

Introductory course using Microsoft Word, Excel, Access, and PowerPoint applications to create business documents. Required: Access to the following equipment and software: Personal computer or laptop with MS Windows operating system (preferably Windows 8 or 10), Microsoft Office Professional, internet access (including email); or access to the CCC Dye Academic Computer Lab for coursework. Recommended: BT-120, and WRD-090 or placement in WRD-098.

**BA-156 Business Forecasting**

3 credits, Winter

Basic economic principles applied to business decision-making, forecasting, and critical thinking skills related to budgeting, planning, financial analysis, and application of business policy and practice. Designed for business majors. Recommended: WRD-090 or placement in WRD-098.

**BA-177 Payroll Accounting**

3 credits, Winter

This course introduces the student to the basic payroll procedures and transactions that are necessary for recording business transactions that compensate personnel. Included in this introduction are wage, salary, and commission or bonus computation and recording, as well as coverage of the federal laws that affect payroll, taxation, and payroll deductions. Prerequisites: BA-111 or BA-211.

**BA-205 Business Communications With Technology**

4 credits, Fall/Winter/Spring

Students practice critical skills for successful communication in a business environment by employing a structured writing process, analyzing audience needs, and identifying and using appropriate communication channels and modalities. Students also work individually to produce a PowerPoint presentation with embedded narration and as team members to manage a comprehensive project and complete a business research paper. Recommended: BA-131 and WR-121.

**BA-206 Management Fundamentals**

4 credits, Fall/Winter/Spring

Concepts and theories of management with focus on planning, organizing, leading, and controlling. Decision making, planning principles, global management, managing people and teams, effective communication, and motivation are included. Prerequisites: WRD-090 or placement in WRD-098. Recommended: BA-251.

**BA-208 Employee and Labor Relations**

4 credits, Winter

Provides a legal and historical overview of employee and labor relations in both union and non-union environments. Presents a realistic picture of collective bargaining and labor relations situations and highlights contemporary issues in employee relations, unions, bargaining units, and employee group representation.

**BA-211 Financial Accounting I**

4 credits, Fall/Winter/Spring/Summer

Student develops skills in the essential principles of accrual-basis financial accounting for service and merchandising companies. Topics cover the recording and reporting of financial transactions according to generally accepted accounting principles through the complete accounting cycle. Included are managing inventory, reconciling the cash account, internal controls, ratio analysis, ethics, and financial statement reporting. Emphasis is on procedure and process. Prerequisites: BA-101. Recommended: BA-104 and BA-111.

**BA-212 Financial Accounting II**

4 credits, Fall/Winter/Spring/Summer  
BA-212 picks up where BA-211 left off with accrual accounting principles and practices for service and merchandising organizations. In this course, students examine several accounting practices more in depth, including accounts receivable, plant assets, investments, current and long-term liabilities, payroll, stockholders' equity, and the cash flow statement. Students are taught how to evaluate financial position through financial statement analysis. This second financial accounting course is designed for students who are interested in business in general, as well as those who are planning a career in accounting. Prerequisites: BA-211.

**BA-213 Decision Making With Accounting Information**

4 credits, Fall/Winter/Spring/Summer  
Building on the introduction to financial accounting in BA-211 and BA-212, BA-213 focuses on managerial accounting, which is the language of business for internal management in manufacturing and service organizations, and which drives effective pricing and operational decisions. Managerial accounting analyzes information about the costs of products and services, as well as for jobs and processes, and how costs flow through the system. Budgets convey an organization's plan of operations, while performance reports compare variances with actual results and examine KPIs. This course is recommended for those interested in business in general, as well as for those planning a career in accounting. Prerequisites: BA-212.

**BA-214 Business Communications**

3 credits, Winter  
This course focuses on the development of written communication skills in a business organization. Within communications, the interpersonal skills, in the form of both written and oral expression, are integrated to achieve individual and organizational objectives. Both informal and formal techniques are applied to a variety of business communication scenarios. Recommended: WR-101 or WR-121, and CS-120 or BA-131.

**BA-216 Cost Accounting**

3 credits, Winter  
Job order and process costing to a higher level, including variances and cost estimations; standard and variable costing in a manufacturing environment; inventory and capacity analysis; customer-profitability analysis; spoilage, rework and scrap; and performance measurement. Prerequisites: BA-213. Recommended: WRD-090 or placement in WRD-098.

**BA-217 Budgeting for Managers**

3 credits, Fall/Spring  
Budgeting is a crucial managerial decision-making and planning tool that also incorporates performance evaluation through variance analysis. This course examines developing and managing department and project budgets in depth, as well as how they fit into the overall organizational framework. Specifically, this course includes coverage of static, flexible, and rolling budgets, capital budgeting, variance analysis, break-even and contribution margin analysis, profit planning, manufacturing costs and sales forecasts, and cost behavior. Recommended: BA-211 or BA-213, or experience in accounting or budgeting, and BA-131 or CS-135S.

**BA-218 Personal Finance**

4 credits, Fall/Winter/Spring  
Analysis and application of basic principles of personal finance including career planning, budgeting and spending, financial decision-making, use of credit, saving and investing, home purchase, taxes, risk management, retirement planning, estate planning, and other major personal finance topics. Prerequisites: MTH-020 or placement in MTH-050 or MTH-060, or BA-104; and WRD-090 or placement in WRD-098.

**BA-222 Financial Management**

3 credits, Winter  
Study of sources and uses of funds, financials, and cash flows; includes valuation of financial assets; long-term cash flows and budgeting; cost of capital; capital structure and dividend policy; working-capital management, ethics, and international business finance. Prerequisites: BA-212.

**BA-223 Principles of Marketing**

4 credits, Fall/Winter/Spring  
Offers a comprehensive investigation of strategic marketing in a global environment. Topics covered will include research, ethics, consumer behavior, product strategy, distribution strategy, promotional strategy and pricing strategy. Recommended: WRD-090 or placement in WRD-098.

**BA-224 Human Resource Management**

4 credits, Fall/Winter/Spring  
Focuses on a practical, real world approach to Human Resource Management for line managers and Human Resource Managers. Introduces history and current legal environment of Human Resource Management and applies current practice in the functions of staffing, human resource development, compensation, safety and health, and employee and labor relations in both union and non-union environment. Recommended: WRD-090 or placement in WRD-098.

**BA-226 Business Law I**

4 credits, Fall/Winter/Spring  
Includes concepts, principles, and rules of law applicable to business and personal transactions, with emphasis on sources of law, the U.S. Constitution, personal and business torts and crimes, case-based applications, ethics, and consumer contract law. Recommended: WRD-090 or placement in WRD-098.

**BA-227 Business Law II**

4 credits, Winter  
Emphasis on real and personal property, negotiable instruments, insurance, documents of title, secured transaction, bailments, commercial paper, agency, bankruptcy, suretyship, bulk sales, and estate planning. Prerequisites: BA-226.

**BA-228 Computerized Accounting**

3 credits, Spring  
Provides the student with an introductory hands-on experience to learn how computers are used for accounting applications using a Windows operating system environment. Prerequisites: BA-111 or BA-211.

**BA-229 Employment Law**

4 credits, Spring  
Comprehensive treatment of federal and state employment law and its impact on the Human Resource Manager and Human Resource Management practices. Prerequisites: BA-224. Recommended: WRD-090 or placement in WRD-098.



**BA-238 Sales**

4 credits, Spring

Professional consultative selling techniques and how professional selling fits into a comprehensive marketing program as well as daily life. Interactive exercises will be used throughout the course that emphasize face-to-face communication skills and relationship building. Recommended: WRD-090 or placement in WRD-098.

**BA-239 Advertising**

4 credits, Winter

Emphasizes a strategic and integrated approach to promotion where traditional and non-traditional techniques of promotion are explored. The relationship and role of advertising to marketing will be stressed throughout the course. Recommended: BA-101, and WRD-090 or placement in WRD-098.

**BA-240 Introduction to Financial Management**

4 credits, Spring

In this course, you will build upon knowledge obtained from the Principles of Accounting courses to comprehend the process and practice of corporate financial management. Purchasing capital assets and undertaking projects requires sound decision making and management of risk, as well as a solid understanding of the time value of money. In this course, you will delve into discounted cash flow analysis for stocks and bonds, capital budgeting, the cost of capital, and effective corporate financial planning. Both theoretical and practical, our focus is on decisions that are made by the corporate financial manager. Prerequisites: BA-131 and BA-212.

**BA-249 Retailing**

3 credits, Not Offered Every Term

Provides an understanding of the types of retail businesses, strategies, operations, formats and environments through which retailing is carried out, including a multi-disciplinary approach to understand the structure of effective retail management. Recommended: WRD-090 or placement in WRD-098.

**BA-250 Small Business Management**

3 credits, Winter

Managing a small business, identifying a market opportunity, developing a business plan, and meeting the competition. Also includes financial accounting and cash-flow projections. Recommended: WRD-090 or placement in WRD-098.

**BA-251 Supervisory Management**

3 credits, Fall/Winter/Spring

Addresses the role and responsibilities of the first-line supervisor or manager. Includes analyzing business, dealing with change, staffing and scheduling, leadership, decision-making, motivational skills, legal considerations, and managing teams. Recommended: WRD-090 or placement in WRD-098.

**BA-254 Basic Compensation & Benefits**

4 credits, Spring

Covers wages, salary benefits, and plans with a primary focus on designing an effective and strategic comprehension and benefit program within an organization. Covers general compensation topics, terminology, and practical applications to the workplace.

**BA-255 Advanced Topics in Accounting**

4 credits, Spring

Build upon knowledge obtained from the Principles of Accounting courses to comprehend and gain practice in more advanced and specialized areas of accounting, which may include Government and Nonprofit Accounting, Auditing and Fraud, and/or Data Analytics. Prerequisites: BA-212. Recommended: BA-213.

**BA-256 Income Tax Accounting**

4 credits, Winter

Detailed review of the federal tax structure, as it relates to the preparation of individual tax returns, including those with business and investment activities. This course briefly overviews partnership and corporate tax returns. Recommended: BA-211 and BA-212, or financial accounting experience.

**BA-261 Consumer Behavior**

4 credits, Spring

Seeks to understand how and why people make consumption decisions then apply this understanding to marketing strategies. Concepts of the consumer decision-making process, personal and interpersonal factors and their impact on consumer decisions are major components. Recommended: WRD-090 or placement in WRD-098.

**BA-268 Applied Project Demonstration**

3 credits, Winter/Spring

Students demonstrate the ability to manage a real-world project from initiation through closing. Course deliverables include project scope statement, communication management plan, risk management plan, status report with Gantt chart, and 'Lessons Learned' report and presentation. The project as well as a comprehensive exam will demonstrate knowledge acquired in prerequisite classes required for the AAS Project Management degree program. Prerequisites: BA-120, BA-125, and BT-177.

**BA-280 Business/CWE**

3-6 credits, Fall/Winter/Spring

Cooperative work experience. On-the-job experience in a business related to the student's major course of study. Under supervision of instructor and employer. Variable Credit: 3-6 credits. May be repeated for up to 6 credits. Required: Student Petition. Corequisites: CWE-281.

**BA-285 Human Relations in Business**

4 credits, Fall/Winter/Spring

Introduces the theory and practical application of human relations at the individual, group, and organizational levels. Emphasizes psychological principles that help build relationships among employees and employers. Includes goal setting, motivation, communication, leadership, conflict management, and individual and group behavior. Recommended: WRD-090 or placement in WRD-098.

**BI****Biology****BI-101 General Biology; Cellular Biology**

4 credits, Fall/Winter/Spring/Summer

An inquiry-based laboratory course focusing on cellular biology, genetics, epigenetics, biotechnology and natural selection. Class uses student centered activities in a collaborative learning environment to enhance appreciation of the biological world. Recommended: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121.

**BI-102 General Biology; Animal Systems**

4 credits, Fall/Winter/Spring/Summer

An inquiry-based laboratory course focusing on human and animal body systems; including teratogens, Hox genes and hormone mimics in embryonic development. Activities emphasize comparisons across animal phyla to better understand the diversity of life. The class uses student centered activities in a collaborative learning environment to enhance appreciation of the animal kingdom. Recommended: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121.

**BI-103 General Biology; Plants & the Ecosystem**

4 credits, Summer/Fall/Spring

An inquiry-based laboratory course focusing on plants and the ecosystem; including plant identification, population dynamics, productivity and energy flow. Activities include an integrated approach to understanding environmental issues and the impact of humans on the biosphere. The class uses student centered activities in a collaborative learning environment to enhance appreciation of the biological world. Recommended: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121.

**BI-112 General Biology for Health Sciences**

4 credits, Fall/Winter/Spring/Summer

A one-term preparatory course that introduces the Health Occupations student to the scientific method, molecular and cellular biology, principles of inheritance, natural selection, tissues and organ systems. Topics and skills covered prepare students to enter BI-231, Anatomy & Physiology and BI-234, Introductory Microbiology. Recommended: MTH-060 or MTH-098 or placement in MTH-065, and WRD-098 or placement in WR-121. Recommended Corequisite: CH-112.

**BI-120 Introduction to Human Anatomy and Physiology**

4 credits, Fall

This laboratory course is designed to serve the students in the Career Technical Programs: Medical Assistant and Clinical Laboratory Assistant students as part of their core curriculum. Material covered includes the structure and function of the human body. Basic chemistry and cell structures are covered, as well as the organization of tissues, organs, and organ systems. Correlations can then be made between this material and disease states commonly encountered in the practice of these fields. Animal organ dissection is required. Corequisites: BI-120L.

**BI-160 Bird Identification & Taxonomy**

3 credits, Not Offered Every Year

Lecture course introducing bird taxonomy, evolution, anatomy and physiology, identification, and behaviors. Identification techniques applied to regional birds through lectures, slides and other activities.

**BI-160L Bird Identification & Taxonomy with Lab**

4 credits, Not Offered Every Year

Lecture course introducing bird taxonomy, evolution, anatomy and physiology, identification, and behaviors. Identification techniques applied to regional birds through lectures, slides and other activities. Includes field identification of common Oregon birds by sight, sound, and habitat. Field trips required along with online research.

**BI-163 Malheur Field Trip**

1 credit, Not Offered Every Year

Four day field trip. Study of plants, animals, geology, and history of the Northern Basin and Range ecoregion at the Malheur Environmental Field Station in southeast Oregon. Required: Student Petition. Required: Field trip.

**BI-165C Natural History of the Oregon Coast**

3 credits, Not Offered Every Year

Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals, birds, estuaries, tidepools, sand dunes, and coastal forests.

**BI-165CL Natural History of the Oregon Coast With Lab**

4 credits, Not Offered Every Year

Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals and birds, estuaries, tide pools, sand dunes and coastal forests. Lab included with field trips and lab activities.

**BI-165D Natural History of the Western Deserts**

4 credits, Spring

A lecture and lab course studying plants, animals, geology, ecology and environmental issues of western deserts. This intensive nine-day field course travels through western desert regions. Required: Student Petition. Prerequisites: WRD-098 or placement in WR-121. Recommended: One term of college-level science.

**BI-175 Integrated Science Inquiry**

4 credits, Fall

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included: Evolution: the Idea that Shocked the World, the People and Animals of Africa, and the Lewis and Clark Expedition. Recommended: WRD-098 or placement in WR-121.

**BI-176 Integrated Science Inquiry**

4 credits, Winter

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included: Human Evolution, Diseases of Africa, and the Lewis and Clark Expedition. Recommended: WRD-098 or placement in WR-121.

**BI-177 Integrated Science Inquiry**

4 credits, Spring

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Evolution & Contemporary Issues, Africa, and the Lewis and Clark Expedition. Recommended: WRD-098 or placement in WR-121.

**BI-204 Elementary Microbiology**

4 credits, Winter

A lab class with environmental focus. This class explores microscopic life and its importance in the environment and in industry. We also learn about the causes and implications of waterborne pathogens. Labs will provide practice with aseptic techniques and introduce tools and current methodologies used in the study of microorganisms.

**BI-211 General Biology for Science Majors (Cellular Biology)**

5 credits, Fall

The first term of a three-term laboratory course sequence for science majors and pre-professional students. The course emphasizes cellular biology; including the process of science, cell structure, organization and function, cellular communication, biochemical processes, DNA cell cycle, protein synthesis, biotechnology, genetics, evolution, and an introduction to tissues, organs and organ systems. Prerequisite or Corequisite: CH-104 or CH-221. Prerequisites: MTH-111 or placement in MTH-112. Recommended: WRD-098 or placement in WR-121.

**BI-212 General Biology for Science Majors (Animal Biology)**

5 credits, Winter

This course is the second quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to animal biology; including animal diversity, development and the effects of Hox genes and hormones, comparisons of animal body systems including human, homeostasis and behavior. Prerequisite or Corequisite: CH-105 or CH-222.

**BI-213 General Biology for Science Majors (Plant Biology & Ecology)**

5 credits, Spring

This course is the third quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to plant biology and ecology; including plant diversity, plant organ systems and their functions, photosynthesis and transpiration, productivity and energy transfer, nutrient cycles, population dynamics, ecosystems and environmental issues. Prerequisite or Corequisite: CH-105 or CH-222.

**BI-231 Human Anatomy & Physiology I**

4 credits, Fall/Winter/Spring/Summer

A lab course designed for students entering the physical education or medically-related fields. Includes body organization, terminology, tissues and systemic study of the integumentary, skeletal and nervous systems. Animal organ dissection required. Prerequisites: BI-112 (preferred), or BI-101 and BI-102, or BI-211. CH-112 (preferred), or CH-104 and CH-105, or CH-221 and CH-222.

**BI-232 Human Anatomy & Physiology II**

4 credits, Fall/Winter/Spring/Summer

Lab course covering structure and function of the muscular, cardiovascular, lymphatic, and respiratory systems. Animal organ dissection required. Prerequisites: BI-231 with a C or better.

**BI-233 Human Anatomy & Physiology III**

4 credits, Fall/Winter/Spring/Summer

Lab course covering neuroendocrine control, digestive, excretory and reproductive systems. Study of fluid, electrolyte and acid-base balance. Animal organ dissection required. Prerequisites: BI-232 with a C or better.

**BI-234 Introductory Microbiology**

4 credits, Fall/Winter/Spring

An introductory microbiology lab course required for health science and science majors. Includes characteristics, physiology and growth requirements of microorganisms, interactions between humans and microorganisms, immunology, infection, and principles of microbial control. This course emphasizes critical thinking and analytical skills in a collaborative laboratory environment. Prerequisites: BI-101, BI-112 or BI-211; and CH-104, CH-112 or CH-221.

**BT****Business Technology****BT-120 Personal Keyboarding**

2 credits, Fall/Winter/Spring

Basic instruction on electronic alphanumeric keyboard. Provides practice for speed and accuracy with individual program. Students will develop the necessary skills to effectively use the Internet, use email, and create simple documents.

**BT-121 Data Entry**

1 credit, Fall/Winter/Spring/Summer

This course is designed to teach the computer numeric keypad by touch with speed and accuracy using industry standards for data entry. This skill is especially helpful to people in the fields of data entry, accounting, office administration, insurance, banking and finance, and any other work that requires numeric input.

**BT-122 Keyboarding Skillbuilding**

2 credits, Fall/Winter/Spring

Designed to improve typing proficiency using the standard keyboard. Students will refine and further develop speed and accuracy skills learned in BT-120 Personal Keyboarding as well as refine the proper formatting of various types of business letters, learn the proper format of an interoffice memo, and review and utilize proper email etiquette within a business setting. Students will utilize MS Word to create letters and memos. Prerequisites: BT-120.

**BT-124 Business Editing I**

3 credits, Fall/Winter

Course builds communication skills through the study of correct usage of grammar, spelling, vocabulary usage, effective writing, and editing principles. Recommended: WRD-090 or placement in WRD-098.

**BT-125 Business Editing II**

3 credits, Winter/Spring

This course follows BT-124 and uses the second half of the same textbook. It covers additional new grammar rules, in addition to other punctuation, capitalization, and numbers. The course also covers composing business communication documents such as memorandums, letters, and reports, as well as using effective communication in a business environment. Prerequisites: BT-124 with a C or better.

**BT-160 Word I**

3 credits, Fall/Winter

Introductory-level course where students learn basic concepts of the Word software program. This course is designed for students who have no or little knowledge of Word. Required: Access to the following equipment and software: Personal computer or laptop with MS Windows operating system (preferably Windows 8 or 10), MS Word, or access to the CCC Dye Academic Computer Lab for coursework. Recommended: 35 words per minute typing skill or BT-120.

**BT-161 Word II**

3 credits, Spring

This is an intermediate-level course where students learn more advanced features of the Microsoft Word software program. The course is designed for students who have completed BT-160, Word I. Required: Access to the following equipment and software: Personal computer or laptop with MS Windows operating system (preferably Windows 8 or 10), MS Word, or access to the CCC Dye Academic Computer Lab for coursework. Prerequisites: BT-160 with a C or better. Recommended: BT-124 and 35 words per minute typing skill.

**BT-172 Introduction to Microsoft Outlook**

2 credits, Spring

Introductory course to using Microsoft's Outlook application as a tool to send and receive e-mail, organize schedules and events, maintain contacts lists, to-do lists, and notes. The material covered in this course teaches the necessary skills that are required in those business environments that use Outlook.

**BT-177 Microsoft Project**

3 credits, Winter

Covers the basics of using Microsoft Project to plan, schedule, and track a project. Also addresses communicating project information, assigning and tracking resources and costs, tracing progress, and closing a project. Concludes with students using Microsoft Project to produce management and other reports and to share project information with other audiences and applications. Required: Access to MS Project or use CCC Dye Academic Computer Lab for coursework.

**BT-216 Office Procedures**

4 credits, Spring

Presents critical thinking, problem solving, and collaborative learning; skills and knowledge are applied to business office operations, including communications, technology, records management, safety, travel, meeting management, mail procedures, reprographics, and career planning. Prerequisites: BT-160.

**BT-262 Integrated Projects**

4 credits, Fall

Advanced use and integration of Microsoft Word, Excel, Access and PowerPoint skills in creating letters, reports, and forms; creation of advanced Excel worksheet reports and budgets; creation of Access databases to generate reports and forms; creation of PowerPoint presentations. Introduction to the use of Adobe Professional for use with documents, forms, and web pages. Google applications such as documents, presentations, spreadsheets, and Gmail. Prerequisites: BT-161 with a C or better.

**BT-271 Advanced Business Projects**

4 credits, Spring

Participate in real-world administrative office experience on the campus of CCC by working as team members in a professional environment. Practice using oral and written communications, analyzing information, event and project planning, problem solving, decision making, prioritizing, applying time management skills, and using industry standard technology skills and tools. Each student will spend 60 to 72 hours per term working in a CCC Office (paired with an Administrative Professional), 2 hours per week within the classroom. Prerequisites: BA-131, BA-205, BT-122, BT-125, BT-160, BT-161, BT-262, and CS-135S.

**CDT****Computer-Aided Drafting Technology****CDT-102 Sketching & Problem Solving**

3 credits, Fall

Freehand sketching encountered in drafting engineering projects. Selecting views and implementing drafting standards. Dimensioning, lettering, sections and auxiliary views are covered. Problem solving in individual and group settings.

**CDT-103 Computer-Aided Drafting I**

3 credits, Winter

Introduction to drafting applications using AutoCAD. Instruction includes problem solving, drawing layout, orthographic multi-view projection, line types, geometric construction and current drafting techniques. Use industry standards for CAD drawing, editing, file management, dimensions and notes. Recommended: CDT-102.

**CDT-108A Introduction to SolidWorks**

3 credits, Fall/Spring

This course is an introduction to the SolidWorks parametric mechanical software. Students will design 3D solid parts, sheet metal parts and assemblies, and develop 2D documentation from them.

**CDT-223 Inventor Fundamentals**

3 credits, Winter

Introduces parametric and adaptive modeling techniques using Autodesk Inventor. This course will guide students through design environment setup, creation of simple and complex part geometry, assembly building, animation, and detailed 2D drawing output. Recommended: Basic working knowledge of Windows operating system and Microsoft Excel.

**CDT-224 Professional Web Design**

1-3 credits, Spring

Introduction to the design, creation and management of professional web pages. Basic and intermediate HTML document creation, introduction to JAVASCRIPT, use and manipulation of graphic image files, animating web page graphics, HTML forms. Variable Credit: 1-3 credits.

**CDT-225 Advanced SolidWorks**

3 credits, Winter

Advanced features of SolidWorks will be discussed and problems will be worked that exemplify them. Subjects include equations, configurations, design tables and dynamics. Required: Student Petition. Prerequisites: CDT-108A.

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**CH****Chemistry****CH-104 Introductory Chemistry**

5 credits, Fall/Winter/Spring/Summer

A lab transfer course for students in nursing, allied health fields and liberal arts. Topics include: observation, measurement, composition, stoichiometry, atomic structure, periodic table, bonding and nomenclature. Prerequisites: MTH-065 or MTH-098 or placement in MTH-095; and WRD-090 or placement in WRD-098.

**CH-105 Introductory Chemistry**

5 credits, Summer/Winter/Spring

A laboratory course discussing heat; molecular and ionic interactions in solids, liquids, gases and solutions; chemical reactions including acid-base, electron transfer and equilibrium. Prerequisites: CH-104.

**CH-106 Introductory Chemistry**

5 credits, Spring/Summer

A lab course discussing organic and biochemistry. Prerequisites: CH-105.

**CH-112 Chemistry for Health Sciences**

4 credits, Fall/Winter/Spring/Summer

One-term preparatory chemistry course for students who want to take BI-231 and/or BI-234. Includes measurement; atomic structure; periodic table; bonding; nomenclature; heat; molecular and ionic interactions in solids; liquids and solutions; chemical reactions including acid-base; organic chemistry; and biochemistry. Prerequisites: MTH-065 or MTH-098 with a C or better or placement in MTH-095. Prerequisites: WRD-090 or placement in WRD-098. Recommended Corequisite: BI-112.

**CH-114 Chemistry in Art**

4 credits, Not Offered Every Term

An introductory laboratory science course designed specifically for the non-science student. Offers a broad, non-quantitative descriptive survey of scientific principles relevant to art and art-related topics such as light, color, pigments, dyes, solubility, acidity, oxidation, and polymers. Emphasizes an interdisciplinary perspective on chemistry. Recommended: WRD-090 or placement in WRD-098.

**CH-150 Preparatory Chemistry**

4 credits, Fall

One term preparatory course for students who must take the general chemistry sequence (CH-221/222/223) but have no chemistry background. Prerequisites: MTH-095 with a C or better or placement in MTH-111.

**CH-221 General Chemistry**

5 credits, Fall/Winter

Transfer lab course for science, engineering, and professional majors. Covers the nature of chemistry, atomic theory, electron configuration, structure, bonding, properties, composition and nomenclature of covalent and ionic substances. Introduces organic chemistry and biochemistry topics. Prerequisites: CH-104 and CH-105, or CH-150, with a C or better; or a year of high school chemistry within five academic years of beginning CH-221 (passed all terms with C or higher).

**CH-222 General Chemistry**

5 credits, Winter/Spring

A lab course discussing reactions, stoichiometry, thermodynamics, organic compounds and polymers, kinetics, and equilibrium. Topics involving organic chemistry and biochemistry are introduced. Prerequisites: CH-221.

**CH-223 General Chemistry**

5 credits, Spring/Summer

A lab course discussing states of matter, solutions, acids and bases, electrochemistry, nuclear chemistry, and spectroscopy. Topics involving organic chemistry and biochemistry are introduced. Prerequisites: CH-222.

**CH-241 Organic Chemistry I**

5 credits, Fall

First term of transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering and biology majors. Prerequisites: CH-223.

**CH-242 Organic Chemistry II**

5 credits, Winter

Second term of transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering and biology majors. Prerequisites: CH-241.

**CH-243 Organic Chemistry III**

5 credits, Spring

Third term of a transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering and biology majors. Prerequisites: CH-242.

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**CJA****Criminal Justice****CJA-101 Criminology**

4 credits, Fall/Winter/Spring

Examines the social problem of crime, including the process of making and breaking laws as well as society's reaction to the phenomenon. Provides a multidisciplinary study of the causes of crime, including its distribution across social strata and demographics. Focuses on theories of criminal behavior and specific types of crime.

**CJA-110 Introduction to Law Enforcement**

3 credits, Fall

Explores theories, philosophies, and concepts of American law enforcement. This course also examines the history of law enforcement, specific components of the system, public safety responses, and the professionals charged with peace keeping.

**CJA-112 Patrol Procedures**

3 credits, Not Offered Every Year

Describes the nature and purpose of patrol activities for the law enforcement officer. Includes routine patrol, emergency procedures and different types of patrols. Examines crime prevention theory and community policing.

**CJA-120 Introduction to Courts**

3 credits, Winter

Studies the judicial process from arrest through appeals, including search and seizure; interrogation; roles of defense attorneys, prosecutors, juries, grand juries, and judges; plea bargaining and guilty pleas; rights of criminal defendants at trial; appeals and habeas corpus.

**CJA-122 Criminal Law**

4 credits, Fall

This course examines the elements, purpose and functions of criminal, traffic, juvenile and liquor laws. Studies historical development, philosophy of law, and constitutional provisions. Examines definition and classification of crime, application of administration of justice, legal research, study of case law, methodology and concepts of law as a social force.

**CJA-130 Introduction to Corrections**

3 credits, Spring

Examines the history, organization, and development of corrections in the United States, including sentencing, incarceration, community corrections and the juvenile justice system. Reviews the use of the death penalty. Identifies trends in corrections.

**CJA-134 Correctional Institutions**

3 credits, Winter

Analyzes prisons, jails and other correctional institutions. Discusses punishment history and rationale. Identifies the functions of the custodial staff and describes institutional procedures: reception, classification, program assignment and release. Studies prison management systems and examines juvenile facilities.

**CJA-137 Mass Murder and Serial Killers**

3 credits, Summer

Explores the phenomenon of both mass murders and serial killings, and the impact each has both upon society and individual victims. Examines recent and historically notorious cases, while probing issues such as causation, social environmental linkage, and the mindset of offenders. May be repeated for up to 3 credits.

**CJA-170 Careers in Criminal Justice**

3 credits, Winter

Prepares students for pursuing a career in the Criminal Justice field. Explores careers in the criminal justice system, including law enforcement, the practice of law, courts, corrections, and private security. Addresses hiring processes, promotions, and workplace ethics. Students will begin creating an e-portfolio. As part of the e-portfolio process, students will analyze first year CJA courses and second year fall term CJA courses for assessment purposes. Provides information on choosing Cooperative Work Experience or Service learning placement in preparation for Criminal Justice Capstone course. Prerequisites: CJA-110 with a C or better.

**CJA-200 Community Policing**

3 credits, Spring

Examines interrelationships and role expectations of agencies and public policy. Explores racial and community tension, bias-based policing, community policing, police misconduct, evidence-based policing and best practices in law enforcement. Prerequisites: CJA-110 with a C or better.

**CJA-201 Juvenile Delinquency**

4 credits, Winter/Spring

Surveys the nature, extent, and causes of delinquent behavior focusing on theories of criminal behavior as they apply to juveniles. Studies historical and contemporary perspectives on juvenile offenders. Provides a multidisciplinary study of the causes of juvenile delinquency. Describes laws, enforcement, court, and correctional procedures within the juvenile system, and explores the differences between adult and juvenile practices.

**CJA-203 Crisis Intervention**

3 credits, Winter

Examines crisis intervention as it applies to emergency service workers. Includes the psychodynamics of family crisis; alcohol/drug related problems; suicide; sexual assault victims; domestic violence; mentally disturbed individuals; neglected, battered, and abused children. Prerequisites: CJA-110 with a C or better.

**CJA-210 Criminal Investigation I**

3 credits, Fall

Introduces the history, theory and principles of criminal investigation in the criminal justice system. Describes crime scene investigation and courtroom aspects of crime scenes including interviews, evidence, follow-up, case preparation, and investigative techniques. Prerequisites: CJA-110 with a C or better.

**CJA-211 Criminal Investigation II**

3 credits, Winter

Continues the study and application of investigative techniques for specific offenses, including: death investigations, domestic violence, elder abuse and sexual offenses. Identifies similarities, differences, and elements of proof needed under state statutes and documentation of investigations through comprehensive reports. Prerequisites: CJA-210 with a C or better.

**CJA-212 Criminal Investigation III**

3 credits, Spring

Continues the study and application of investigative techniques acquired in CJA-210 Criminal Investigation I and CJA-211 Criminal Investigation II. Includes "hands-on" application of investigative processes from a practical aspect, including: search warrant writing, fingerprinting, evidence collection, and crime scene photography, diagramming and reconstruction. Prerequisites: CJA-210 and CJA-211 with a C or better.

**CJA-213 Interview & Interrogation**

3 credits, Not Offered Every Year

Examines the dynamics of interviews and interrogations including common processes, approaches and techniques. Ethical, legal and psychological issues are also considered. Includes methods of how to analyze statements and behavior for deception and truthfulness.

**CJA-214 Intimate Partner Violence**

3 credits, Fall

This course will analyze the historical, social, legal, and psychological aspects of Intimate Partner Violence. Includes definitions of the problem, demographics, survivors, perpetrators, children who witness, strategies and tactics of abuse and survival, and core strategies for legal intervention. Prerequisites: CJA-203 or HS-100.

**CJA-215 Sexual Abuse and Human Trafficking**

3 credits, Spring

This course will explore various aspects of sexual abuse cases and human trafficking in the state of Oregon and the U.S., including discussion of societal and historical perspectives, responses to victim trauma, sexual offenders and law enforcement response to these crimes.

**CJA-222 Procedural Law**

3 credits, Winter

This course discusses the constitutional and statutory provisions related to arrest, search and seizure. The course includes use of deadly force, admissions, interrogations, plain view limitations, law of stop and frisk, and officer testimony. Prerequisites: CJA-122 with a C or better.

**CJA-223 Criminal Justice Ethics**

3 credits, Fall

Surveys common ethical frameworks and then examines ethical issues, questions, challenges and consequences facing criminal justice professionals, including law enforcement, corrections, the courts and others. Prerequisites: CJA-110 with a C or better.

**CJA-232 Case Management**

3 credits, Spring

Introduces case management techniques used by corrections and human services professionals in one-on-one and group contacts with clients. Explores a variety of case management materials, with an emphasis placed upon objective case planning and monitoring. Prerequisite Or Corequisite: HS-156.

**CJA-243 Drugs, Crime and the Law**

3 credits, Spring

Examines the most common types of drugs consumed in the U.S. and societal problems related to drug use. Discusses potential crimes associated with drugs, and law enforcement strategies used to address drug manufacturing, distribution and use. Prerequisites: CJA-110 with a C or better.

**CJA-250 Reporting, Recording & Testifying**

4 credits, Spring

Surveys documentation skills in criminal justice professions. Verbal, nonverbal and written forms of criminal justice related workplace communication are studied and practiced, including communicating with the public, basic interviewing, documentation, courtroom testimony, and report writing. Prerequisites: WR-121 with a C or better.

**CJA-252 Introduction to Restorative Justice**

3 credits, Fall

Provides a critical introduction to restorative justice. Covers fundamental values and principles of restorative justice, and the experience and interests of key stakeholders (victims, offenders, communities, and systems).

**CJA-270 Criminal Justice Capstone**

3 credits, Spring

This course applies and assesses the knowledge and skills gained by students who are completing the criminal justice program. Students will complete analyses of second year criminal justice courses, will review program learning outcomes, complete and present an e-portfolio, and take an exit examination. Prerequisites: CJA-170. Corequisites: CJA-280 and CWE-281, or HD-102.

**CJA-280 Criminal Justice/Corrections/CWE**

2-6 credits, Fall/Winter/Spring/Summer  
Cooperative work experience. Supervised experience in criminal justice, corrections, juvenile corrections, or related occupations. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition. Prerequisites: CJA-170. Corequisites: CWE-281.

**CJA-281 Criminal Justice/Corrections/CWE**

2-6 credits, Fall/Winter/Spring/Summer  
Cooperative work experience. Supervised experience in criminal justice, corrections, juvenile corrections, or related occupations. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition. Prerequisites: CJA-170 and CJA-280. Corequisites: CWE-281.

**CJA-290 Issues in Criminal Justice**

1-3 credits, Not Offered Every Term

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of criminal justice. This topic will be pulled from a comprehensive list of areas identified by criminal justice and corrections professionals as having importance for students pursuing work in the field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

**CLA****Clinical Laboratory Assistant/Phlebotomy****CLA-100 Introduction to Health Care**

2 credits, Fall

An overview and introduction to health-care systems and career trends, ethical and legal responsibilities, personal and workplace safety, blood-borne pathogens, professionalism, life-long learning Health Insurance Portability and Accountability Act (HIPAA), and effective communication.

**CLA-101 Clinical Laboratory Assistant Skills I**

3 credits, Fall

Presents the student with a general overview of a clinical laboratory, including state and federal regulations, quality assurance practices, laboratory terminology, laboratory staffing and a basic understanding of Waived laboratory testing. Specimen collection and handling will be addressed. The majority of the competencies required in the Core Module of the National Accrediting Agency for Clinical Laboratory Science, (NAACLS's) Clinical Assistant Program will be covered. Required: Student Petition. Required: Admission to the Clinical Laboratory Program. Prerequisites: MA-110, and MTH-050 or MTH-065. Corequisites: CLA-101L.

**CLA-101L Clinical Laboratory Assistant Skills Lab I**

1 credit, Fall

CLA-101L is a companion course to CLA-101 and presents the students with a general overview hands-on clinical laboratory skills, including performance of waived testing and specimen processing within the boundary of state and federal regulations. It presents quality assurance practices, insuring a basic understanding of quality laboratory testing. Many of the competencies required in the Core Module of the National Accreditation Agency of Clinical Laboratory Science (NAACLS's) Clinical Assistant Curriculum will be covered. Required: Student Petition. Corequisites: CLA-101.

**CLA-102 Clinical Laboratory Assistant Skills II**

3 credits, Winter

This course covers hematology and urinalysis theory at the clinical assistant level scope of practice. Correct specimen collection will be emphasized. This course will instruct students to define, assess, and evaluate various waived tests. Accuracy and attention to detail will be stressed. Quality control topics covered include the use of controls, standards, and laboratory protocols. Required: Students must be admitted into the current CLA cohort, or Student Petition. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or equivalent. Corequisites: CLA-102L.

**CLA-102L Clinical Laboratory Assistant Skills Lab II**

1 credit, Winter

Addresses hematology and urinalysis laboratory techniques within assistant level scope of practice. Correct specimen collection techniques, hematology and urinalysis terminology, and quality assurance issues, will be practiced. Some of the required competencies of National Accrediting Agency of Clinical Laboratory Science (NAACLS) will be addressed or revisited. Required: Student Petition. Required: Students must be admitted into the current CLA cohort. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or equivalent. Corequisites: CLA-102.

**CLA-103 Clinical Laboratory Assistant Skills III**

3 credits, Spring

A continuation of CLA-101 and CLA-102 with emphasis on microbiology, clinical chemistry, serology, and immunology. The clinical laboratory assistant scope of practice, professionalism in the workplace and patient test management will be discussed in detail. Required: Student Petition. Required: Students must be admitted into the current CLA program. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120. Corequisites: CLA-103L.

**CLA-103L Clinical Laboratory Assistant Skills Lab III**

1 credit, Spring

A continuation of CLA-101L and CLA-102L with emphasis on microbiology, clinical chemistry serology and immunology. The clinical laboratory assistant scope of practice when performing waived testing and professionalism in the workplace will be practiced. Some of the NAACLS competencies will be performed and/or revisited. Required: Student Petition. Required: Students must be admitted into the current CLA program. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120. Corequisites: CLA-103.

**CLA-115 Laboratory Administrative Skills**

2 credits, Winter

Designed for the laboratory assistant employed in any healthcare facility, most applicable to physician's office laboratory, instructing them in laboratory coding, billing and insurance practices, and other administrative duties, with emphasis on patient test management and professionalism. This course also covers vital signs as required by NAACLS. Required: Student Petition.

**CLA-118 Phlebotomy for Clinical Laboratory Assistants**

1 credit, Fall

Designed for the clinical laboratory assistant student to provide a broad understanding of blood collection and specimen handling techniques used in ambulatory and medical center laboratories. Also prepares students to perform these tasks effectively and safely in the workplace. Universal and standard precautions and other state and federal laboratory regulations will be addressed. Required: Student Petition. Required: Student must be admitted into the current CLA cohort. Corequisites: CLA-118L.

**CLA-118L Phlebotomy for Clinical Laboratory Assistant Lab**

1 credit, Fall

This course is a companion course to CLA-118 and is designed for the Clinical Lab Assistant student to practice and gain skill and experience in blood collection according to standard operating procedures. Students will practice specimen handling and processing techniques used in laboratories. The students will perform these activities effectively and safely, emulating the workplace environment. Universal and Standard Precautions will be stressed. The students will collect blood samples on their lab partners through-out the term. Required: Student Petition. Required: Student must be admitted into the current CLA cohort. Corequisites: CLA-118.

**CLA-119 Laboratory/Phlebotomy Practicum**

3 credits, Winter

Students will participate in supervised, unpaid assignment, in community medical center and clinic laboratories to gain practical experience. A weekly seminar accompanies this course. Required: Student Petition. Required: Student must be enrolled in current CLA cohort. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or BI-101 and BI-102.

**CLA-120 Laboratory/Phlebotomy Practicum II**

4 credits, Spring

CLA-120 is a continuation of CLA-119. Students will participate in a supervised, unpaid assignment, known as a clinical practicum in area medical laboratories to gain practical experience. A weekly seminar accompanies this course. Required: Student Petition. Prerequisites: CLA-119.



**CLA-125 Introduction to Clinical Research**

2 credits, Spring

An overview of research as applied through clinical studies. Participants will learn elements of proper research techniques as conducted under the supervision of a physician or Ph.D. Required: Student Petition. Required: Student must be enrolled in current CLA cohort.

**CLA-130 Specimen Collection**

1 credit, Winter

This course covers appropriate specimen collection of all constituents of human anatomy for various laboratory testing and teaches students to recognize inappropriate specimen collection and develop problem solving skills as health professionals to protect patient safety. The final portion of this course qualifies students to perform drug testing collections under US Department of Transportation (DOT) regulations. The final exam will include a demonstration for collection proficiency. Specimen management and potential adulteration of specimens for drug testing will be addressed. This course is required for Clinical Laboratory Assistant program students. Required: Student Petition. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or equivalent.

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**COMM****Communication Studies****COMM-100 Basic Speech Communication**

3 credits, Fall/Winter/Spring

Explores interpersonal and small group dynamics and communication skills in day-to-day formal and informal situations. Examines positive self-concept, listening skills, verbal and non-verbal modes of communication, and clarity of expression. Designed for non-transfer students.

**COMM-111 Public Speaking**

4 credits, Fall/Winter/Spring/Summer

Practice in organization, research and delivery of a variety of speeches. Prerequisites: WRD-098 or placement in WR-121.

**COMM-112 Persuasive Speaking**

4 credits, Not Offered Every Year

Study and practice of persuasive speaking, audience analysis, reasoning, and the basic theories of persuasion. Prerequisites: COMM-111 or Student Petition.

**COMM-126 Introduction to Gender Communication**

4 credits, Fall/Winter

Examines masculine and feminine communication patterns, including their differences and similarities. Discusses gender identity formation, roles, social influences, and current issues in various personal and professional settings. Recommended: WRD-098 or placement in WR-121.

**COMM-140 Introduction to Intercultural Communication**

4 credits, Not Offered Every Term

Intercultural Communication is a course dedicated to exploring the impact cultural differences have on the communication process. Students explore their own cultural behaviors and possible ways to deal with difficult situations when cultural differences cause a problem(s). Emphasis is given to the influence of culture on the interpretation of the communication act and to the communication skills that enhance cross-cultural communication. Required: Non-native English speakers must have a Student Performance Level of 8 as measured by the BEST Plus. There is not a requirement for native speakers. Recommended: WRD-098 or placement in WR-121.

**COMM-212 Mass Media & Society**

4 credits, Fall/Winter/Spring

This course takes students through a critical study of the production and consumption of mass media, including television, radio, books, film, news, advertising and the internet. Students also examine the economic and social organization of mass media, the growth of new media technologies, and the relationship between media and the public. Recommended: WRD-098 or placement in WR-121.

**COMM-218 Interpersonal Communication**

4 credits, Fall/Winter/Spring/Summer

The interpersonal communication process is examined through lectures, reading, and exercises. Subjects include personal and professional relationships, goal-setting, first impressions, conflict resolution, non-verbal messages, image building, self-concepts and assertiveness. Recommended: WRD-098 or placement in WR-121.

**COMM-219 Small Group Discussion**

4 credits, Not Offered Every Year

Theories and practices of small group communication through group discussions, readings and written exercises. Emphasis on effective group communication, leadership skills, and problem-solving in small groups. Recommended: WRD-098 or placement in WR-121.

**COMM-227 Nonverbal Communication**

4 credits, Winter

Explores theories and types of nonverbal behavior in relation to the creative process of human communication. Examines the influence, interpretation, and/or management of such qualities as appearance, body movement, facial expression, voice, use of space, touch, and time. Considers how physical environments, social roles, gender, and inter/intra-cultural beliefs and values have an effect on relationships among individuals and groups. Applies theoretical interpretations to nonverbal communication found in various forms of human expression. Recommended: Placement in WR-121.

**COMM-280 Speech/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job experience in the field of communications. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

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**CS****Computer Science****CS-120 Survey of Computing**

4 credits, Fall/Winter/Spring/Summer

A computer competency course to familiarize students with computer concepts, software applications and the implications of living in the digital age. Introduces students to computer concepts, including, but not limited to the Microsoft Windows environment, Microsoft Office Applications, hardware terminology, social media and the Internet. Required: Flash drive. Prerequisites: Placement in CS-120, and WRD-098 or placement in WR-121.

**CS-125H HTML & Web Site Design**

3 credits, Summer/Fall/Winter

Hands-on approach to planning, design, and developing published web sites using HTML tags in a text editor. The class focuses on basic HTML coding using HTML 5 models. Hyperlinks, images, cascading style sheets, forms, accessibility and design principles will be covered, as well as tools such as site management, validators, and page editors. Recommended: CS-120 or equivalent experience.

**CS-133S Introduction to JavaScript & Server-Side Scripting**

3 credits, Winter

Design, programming, testing of scripted web pages using JavaScript for client-side applications and PHP for server-side applications. Introduction to fundamental concepts of interactive web pages and server-side connectivity. Covers the Document Object Model (DOM) and programming constructs like variables, operators, functions, control structures, and exception handling. Prerequisites: CS-125H and MTH-065 or equivalent experience. Recommended: MTH-060 or placement in MTH-065.

**CS-133VB Visual Basic.NET I**

3 credits, Fall/Winter/Spring

Hands-on approach to software design using object-oriented programming. Planning an application, building a user interface, using variables and constants, calculating, accumulating, counting, making decisions, using functions, and using menus. Prerequisites: BA-131 or CS-120. Recommended: MTH-060 or placement in MTH-065.

**CS-135DB Microsoft Access**

3 credits, Fall/Spring

Focuses on the advanced database capabilities using a current version of Microsoft Access. Topics include design, construction, and documentation of a database management system, designing reports, forms, advanced form techniques, advanced queries, customizing tables, and creating and using an application system with macros. Required: Computer literacy: file management; familiarity with Microsoft Office interface; cut, copy & paste.

**CS-135I Advanced Web Design With Dreamweaver**

3 credits, Spring

Plan and publish a standards-based, accessible web site via a variety of tools, including the Adobe Creative Suite. Complete market and user-needs analysis to best target site content and design. Create a graphical web site mock-up, then use CSS (including a framework and pre-processors), scripts, and multimedia to realize site goals. Emphasizes professional design techniques. Prerequisites: CS-125H, or equivalent experience with hand-coded HTML and CSS.

**CS-135S Microsoft Excel**

3 credits, Fall/Winter/Spring

Focuses on advanced spreadsheet capabilities using a current version of Microsoft Excel. Topics include design, construction, and documentation of spreadsheets, use of templates, multiple worksheets, complex formulas, functions and filtering, Pivot Tables, advanced chart features, sorting, database capabilities, finding data, creating subtotals, using lookup tables, finding trends and forecasting, creating and editing macros, validating data, and working with controls. Required: Computer literacy: file management, familiarity with MS Office interface, ability to understand and use provided formulas to solve problems.

**CS-135W Microsoft Word**

3 credits, Winter

This course focuses on advanced word processing features using the latest version of Microsoft Word. Topics include using tables, merging form letters and data source files, desktop publishing, large document capabilities including master documents and indexes, and linking and embedding objects between Office applications. Required: Computer literacy: file management, fluency with operating system, familiarity with MS Office interface.

**CS-140 Introduction to Operating Systems**

4 credits, Fall/Spring

Introduction to the theory and practical foundations of the Windows, Linux/UNIX, and macOS desktop operating systems. Discussion of and practice with OS administration through installation, configuration, networking, security, and virtualization. Prerequisites: CS-120 or equivalent placement, and MTH-060 or placement in MTH-065, and WRD-098 or placement in WR-121.

**CS-140L Linux for Programmers**

4 credits, Spring

Introduction to the Linux command line and software development tools. Covers how to use the command line and build tools, including VIM, GCC/G++, make, gdb, and others. Students will gain experience with the build tools by writing and debugging relatively complex programs in both C and C++. Prerequisites: CS-162.

**CS-151 Networking I**

4 credits, Winter

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes. This course, along with CS-152, cover the topics on the CISCO CCENT exam. Prerequisites: CS-160 or Student Petition.

**CS-152 Networking II**

4 credits, Spring

Practices the building and servicing of basic computer networks. Topics include physical media, network design, addressing, routing, switching, and management used in common LANs and the Internet. This course, in conjunction with CS-151, covers the topics of the CompTIA Network+ exam. Prerequisites: CS-151 and CS-227.

**CS-160 Computer Science Orientation**

4 credits, Fall/Winter/Spring

Examines foundational computing subjects used in Computer Science and Information Technology. Topics include computer architecture, electronic logic, data representation, networking, algorithms and programming, which are used in successive Computer Science courses. Information about degrees in Computer Science and Information Technology is also covered. Recommended: MTH-060 or placement in MTH-065. WRD-098 or placement in WR-121. CS-120 or placement in CS-121.

**CS-161 Computer Science I**

4 credits, Fall/Winter

Introduction to fundamental concepts of structured programming, including problem solving, algorithm and program design, data types, loops, control structures, subroutines, and arrays. Learn to write structured programs in a high level programming language. Prerequisites: MTH-111 or placement in MTH-112, or 4 years high school math.

**CS-162 Computer Science II**

4 credits, Winter/Spring

Introduces fundamental concepts of object oriented programming and dynamic memory management. Covers objects, classes, pointers, dynamic memory allocation, linked lists, and program correctness, verification, and testing. Prerequisites: CS-161.

**CS-181 CMS Web Development**

3 credits, Winter

Explores creating dynamic and interactive web sites via the use of a current content management system (CMS) and shopping cart utility. Includes installation of CMS/database, working with templates, creating efficient site navigation, enhancing sites using components, modules, plugins and extensions, and user management. Prerequisites: CS-125H, or equivalent experience with hand-coded HTML and CSS.

**CS-201 Computer Systems II**

4 credits, Fall

Introduction to computer systems from a software perspective. Topics include: Basic machine organization, system programming in C and assembly language, introduction to system programming tools (gcc, makefile, gdb), data representation (bits & bytes, characters, integers, floating point numbers), implementation of control flow, procedure calls, and complex data types at the machine level, linking and loading, exceptions and interrupts, process control and signals, system calls, file I/O, timing and improving program performance, basic memory hierarchy, and dynamic memory allocation techniques. Prerequisites: CS-162.

**CS-202 Program Structures**

4 credits, Winter

Students will become familiar with advanced C++ and Java syntax for object-oriented programming. Use of the file system, operating system calls, and shell-level programming; low-level debugging of high-level programs. Programming exercises will include applications of data structures and memory management techniques. Prerequisites: CS-162.

**CS-225 Computer End User Support**

3 credits, Fall/Spring

Addresses professional and interpersonal skills needed by technicians who support and manage hardware and software information systems. Customer service skills; troubleshooting; helpdesk operation; product needs analysis, evaluation, purchase, and installation; technical documentation and training. Prerequisites: CS-120 or placement in CS-121 or equivalent experience. WRD-098 or placement in WR-101 or WR-121.

**CS-227 Computer Hardware & Repair**

4 credits, Fall

An in-depth course in computer hardware. Covers operational concepts, identification, installation, configuration, and troubleshooting of power supplies, motherboards, microprocessors, memory modules, disk drives, optical drives, and expansion cards. This course, in conjunction with CS-228, covers the topics of the CompTIA A+ certification exam.

**CS-228 Computer OS Maintenance & Repair**

4 credits, Winter

An in-depth course in operating system maintenance and troubleshooting. Covers configuration, maintenance, and troubleshooting of desktop and mobile operating systems, the fundamentals of cloud computing, and client network configuration and troubleshooting. This course, in conjunction with CS-227, covers the topics on the CompTIA A+ certification exam. Prerequisites: CS-227.

**CS-234J jQuery Web Development**

3 credits, Spring

In-depth exploration of creating dynamic websites using the jQuery function library. Topics include creating AJAX applications, XML and JSON data formats, image effects like sliders and lightboxes, navigation effects, mobile-friendly effects and more. Prerequisites: CS-133S or previous HTML and programming experience.

**CS-234P PHP/MySQL Web Development**

3 credits, Spring

Use PHP and MySQL to develop dynamic web sites for use on the Internet. Develop web sites ranging from simple online information forms to complex online applications. Introduce programming fundamentals including variables, control structures, functions and objects. Applications developed use MySQL as the backend database and will explore database connectivity, querying, and security. Prerequisites: CS-125H or equivalent experience. Recommended: CS-275.

**CS-240L Linux Administration I**

4 credits, Fall/Spring

Covers the fundamentals of the Linux operating system. Topics include: system architecture, installation, command line and file system. This course, along with CS-241L, covers the topics of the Linux LPIC-1 (or CompTIA Linux+) certification exam. Prerequisites: CS-140.

**CS-240M macOS Administration**

3 credits, Winter

Covers the fundamentals of installing, configuring, troubleshooting, and supporting the macOS operating system. Topics include: installation and setup, user accounts, file systems, data management, applications, network configuration, network services, peripherals, startup and troubleshooting. This course covers the topics of the Apple macOS Support Essentials certification exam. Prerequisites: CS-140.

**CS-240W Windows Desktop Administration**

3 credits, Winter

Covers the fundamentals of installing, configuring, troubleshooting, and supporting the Windows operating system. Topics include: installation, managing disks and file systems, file access security, users, profiles and policies, groups, security, backup, remote access, printing, and troubleshooting. This course covers the topics of the Microsoft Configuring Windows Devices certification exam. Prerequisites: CS-140.

**CS-250 Discrete Structures I**

4 credits, Winter

Students will be introduced to discrete structures and techniques for computing. The course, which is the first in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Sets; Graphs and trees; Functions: properties, recursive definitions, solving recurrences; Relations: properties, equivalence, partial order; Proof techniques: inductive proof; Counting techniques and discrete probability. Prerequisites: MTH-251.

**CS-251 Discrete Structures II**

4 credits, Spring

Continuation of the introduction to discrete structures and techniques for computing started in CS-250. The course, which is the second in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Logic: propositional calculus, first-order predicate calculus; Formal reasoning: natural deduction, resolution; Applications to program correctness and automatic reasoning; Introduction to algebraic structures in computing. Prerequisites: CS-250.

**CS-260 Data Structures**

4 credits, Fall/Spring

Covers common data structures used for the storage and manipulation of data, as well as data abstraction, sorting algorithms, and algorithm analysis. Data structures include linked lists, stacks, queues, binary trees, b-trees, hash tables, and graphs. Prerequisites: CS-162.

**CS-275 Database Design**

3 credits, Winter

Focuses on design of a relational database management systems (RDMS). Topics will include database development using the a) requirement, b) design, c) implementation model, database theory from flat table design to relational systems, entity-relationship models, one-to-one, one-to-many, and many-to-many relationships, referential integrity, normalization of tables, database programming and querying with SQL, and database security. Although other platforms may be demonstrated, the majority of work will be done with MySQL Server. Required: Computer literacy: file management, fluency with a current Windows OS, familiarity with virtual machines.

**CS-279W Windows Server Administration**

4 credits, Spring

Covers the fundamentals of installing, configuring, troubleshooting, and supporting the Microsoft Windows Server operating system and network infrastructure. Topics include: installation, Active Directory, data storage, resource access, security, monitoring, and disaster recovery. This course introduces the topics of the Microsoft Installation, Storage, and Compute with Windows Server certification exam. Prerequisites: CS-151 and CS-240W.

**CS-280 Computer Science/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative Work Experience. This course provides supervised work experience to supplement the academic classroom environment. Work examples include user support, work with computer applications or programming languages, installation or management PC computer systems, and developing websites. Variable Credit: 1-6 credits. May be repeated for up to 9 credits. Required: Student Petition. Corequisites: CWE-281.

**CS-284 Network Security**

3 credits, Winter

This course provides an introduction to the core security skills needed for monitoring, detecting, investigating, analyzing and responding to security events, thus protecting systems and organizations from cybersecurity risks, threats and vulnerabilities. This course covers the topics of the Cisco Cybersecurity Fundamentals and Cybersecurity Operations certification exams. Prerequisites: CS-151. Recommended: CS-240L and CS-240W.

**CS-288W Windows Network Administration**

4 credits, Winter

Continued coverage of network services and administration using Microsoft Windows Server. Topics include: IPv4 and IPv6 addressing, DNS, DHCP, IPAM, network protection, and remote access. This course covers the topics of the Microsoft Networking with Windows Server certification exam. Prerequisites: CS-279W.

**CS-289 Web Server Administration**

4 credits, Spring

An introduction to Apache httpd and Microsoft Internet Information Server. Topics include: installation, administration, security, and troubleshooting, as well as the http, https, and ftp protocols. Prerequisites: CS-240L and CS-240W.

**CS-297N Network Capstone**

4 credits, Spring

This class affords students the opportunity to put all the discrete information learned from their program classes together towards the completion of an enterprise computer project.

**CS-297W Website Capstone**

3 credits, Spring

The capstone course for the web development AAS programs. Provides the opportunity to function in a production design environment, work cooperatively with students from other focus areas, and research emerging website technologies. Emphasis will be placed on client interaction, project teams, and accountability, as well as the development of a professional portfolio web site or completion of a research project in an emerging web-related technology. Prerequisites: CS-133S or CS-135I, and CS-195.

**CWE****Cooperative Work Experience****CWE-181 Work Exploration**

1-3 credits, Fall/Winter/Spring/Summer

Work exploration provides students an opportunity to explore career options to make informed decisions about possible career fields and programs of study. This class is focused on exploration activities such as job shadow, not demonstration of skills gained through a program. Work exploration is a general course unrelated to specific program areas and does not have a co-requisite seminar. Variable Credit: 1-3 credits. May be repeated for up to 3 credits.

**CWE-281 Cooperative Work Experience Seminar**

0 credits, Fall/Winter/Spring/Summer  
The seminar provides an opportunity to develop the career management skills necessary to obtain, sustain, and advance in employment. Prepares students for career success. Corequisites: Program specific CWE course.

**DA****Dental Assistant****DA-101 Dental Radiology I**

2 credits, Fall

Introduction to history and principles of dental radiology, terminology, and basic physics associated with x-rays, biological effects of x-rays, anatomical landmarks and infection control. Required: Student Petition. Required: Acceptance into Dental Assistant program. Corequisites: DA-101L.

**DA-101L Dental Radiology I Lab**

1 credit, Fall

This course covers practical instruction in radiation health and safety, types of films, film holders, processing and mounting of dental films, use of x-ray equipment, infection control techniques, disposal of hazardous waste. Introduces the use of digital radiation. All exposure techniques performed on x-ray manikins. Required: Student Petition. Required: Acceptance into Dental Assistant program. Corequisites: DA-101.

**DA-102 Dental Radiology II**

2 credits, Winter

Alternative radiographic techniques are discussed as students develop their knowledge in the following areas: bisecting, extra-oral radiography, techniques for children, and patients with special needs. This course provides an in-depth study of the purpose and uses of panoramic imaging, digital imaging, three-dimensional digital imaging, and occlusal examinations. Identification of radiographic interpretation and infection control procedures will also be covered. Required: Student Petition. Required: Acceptance into the Dental Assistant program. Prerequisites: DA-101 with a C or better. Corequisites: DA-102L.

**DA-102L Dental Radiology II Lab**

1 credit, Winter

Knowledge and skills in alternative radiographic techniques are taught as students demonstrate exposure techniques and corrective measures of various alternative radiographic techniques. Students meeting radiographic proficiency on the x-ray mannequin prepare for the Radiation Health and Safety (RHS) proficiency exam. Candidates for the RHS proficiency exam will follow all RHS, Dental Assisting National Board (DANB) and Oregon examination requirements in preparation of patient radiographs. Required: Student Petition. Required: Acceptance into the Dental Assistant program. Prerequisites: DA-101 with a C or better. Corequisites: DA-102.

**DA-104 Clinical Procedures I**

2 credits, Fall

Discussion in the practice of patient care including the collection of patient medical and dental histories and maintenance of accurate treatment records. Explores the history of dentistry, dental ethics, law, and HIPAA. The dental healthcare team, dental office design and the dental profession will also be discussed. Required: Student Petition. Required: Acceptance into Dental Assistant program. Corequisites: DA-104L.

**DA-104L Clinical Procedures I Lab**

1 credit, Fall

This course prepares the student for basic chairside assisting and general procedures. Application of essential skills in seating and dismissing patients, ergonomics, taking and recording vital signs, and infection control are taught and practiced in a dental laboratory setting. Required: Student Petition. Required: Acceptance into Dental Assistant program. Corequisites: DA-104.

**DA-105 Clinical Procedures II**

2 credits, Winter

A foundational course in preventive dentistry. Examines the study of preventive education, oral hygiene instruction, nutrition, fluoride agents, coronal polishing and sealants. The continuation of oral evacuation and isolation techniques will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-104 with a C or better. Corequisites: DA-105L.

**DA-105L Clinical Procedures II Lab**

1 credit, Winter

Further develops the development of chairside skills and introduces the application of preventive procedures such as coronal polishing, fluoride treatment and oral hygiene instruction. Basic knowledge in the application of dental sealants is also taught. Lab skills such as the placement and removal of matrix retainers and rubber dams are taught to provide preparation for chairside dental assisting functions. Aseptic procedures are practiced during all lab skills. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-104L with a C or better. Corequisites: DA-105.

**DA-106 Clinical Procedures III**

2 credits, Spring

This course provides an in-depth knowledge of dental specialties. Advanced and expanded dental assisting functions, tray set-ups and procedures in endodontics, periodontics, oral surgery, orthodontics and pedodontics are covered. Principles and procedures for amalgam and composite polishing will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-105 with a C or better. Corequisites: DA-106L.

**DA-106L Clinical Procedures III Lab**

1 credit, Spring

This course covers advanced and expanded dental assisting procedures in dental specialties. Tray set-up, dental materials and specific specialty procedures will be covered in the following dental specialties: orthodontic, periodontics, oral surgery and endodontics. Laboratory instruction in study casts, amalgam, and composite polishing will be taught on dental manikins. Required: Student Petition. Required: Admission into the Dental Assistant program. Prerequisites: DA-105L with a C or better. Corequisites: DA-106.

**DA-107 Dental Materials I**

2 credits, Fall

This course is an in-depth level of instruction in the composition and manipulation of dental restorative materials, and dental cements. Examinations of general dentistry and chairside assisting with direct permanent restorations such as amalgam and composite will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program. Corequisites: DA-107L.

**DA-107L Dental Materials I Lab**

1 credit, Fall

This course covers the application of the essential skills necessary in assisting with amalgam and composite restorations. Covers tray-set-ups, pre and post-operative instructions, instrument transfer, and oral evacuation with amalgam and composite procedures. The identification and application of dental cements used in general dentistry will also be covered. Includes manipulation, storage and disposal of hazardous dental materials and cements. Required: Student Petition. Required: Acceptance into Dental Assistant program. Corequisites: DA-107.

**DA-108 Dental Materials II**

2 credits, Winter

This course focuses on in-depth knowledge of the properties, uses and manipulation of impression materials, gypsum products and waxes. Foundational knowledge will prepare students for the fabrication of custom trays, bleaching trays, and provisional restorations. Includes knowledge of fixed and removable prosthodontic procedures and rationale for polishing removable appliances. An overview of dental implants will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-107 with a C or better. Corequisites: DA-108L.

**DA-108L Dental Materials II Lab**

1 credit, Winter

Essential skills in the manipulation and application of dental impression materials, gypsum products and waxes will be covered. Thorough knowledge of laboratory skills in the fabrication of bleaching trays and provisional restorations will be taught. Demonstration of custom trays and uses are introduced. The instrumentation and procedures for fixed and removable prosthodontics will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-107L with a C or better. Corequisites: DA-108.

**DA-110 Clinical Practicum I**

1 credit, Fall

Clinical practicum begins in the seventh week of class. Students begin to apply basic dental assisting procedures taught in weeks one through six. OSHA, hazard communication and infection control are followed for student and patient safety. A minimum of 8 supervised unpaid hours per week is required for term one practicum. Students will participate in one seminar held prior to clinical practicum. Required: Student Petition. Required: Acceptance into Dental Assistant program.

**DA-115 Dental Science**

2 credits, Fall

Introduction and general study of anatomy, physiology, and oral pathology. An in-depth level course of study in oral anatomy, histology and embryology. Introduction to charting will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program.

**DA-120 Clinical Practicum II**

5 credits, Winter

Supervised unpaid practice and improvement of clinical skills taught in clinical procedures, dental materials and radiology. Covers advanced Expanded Functions Dental Assisting (EFDA) skills. Implement infection control protocols. Introduce basic business office procedures. Ten hours of community service will be required. Participate in two seminars during the term. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-110 with a C or better.

**DA-125 Dental Infection Control**

2 credits, Fall

This course covers the introduction and general study of microbiology, major groups of microorganisms, viral and bacterial diseases. Disease transmission, infection prevention, disinfection and instrument processing techniques will also be covered. An in-depth level of the Bloodborne Pathogens Standards and Hazard Communication will be taught and integrated throughout the didactic, preclinical, laboratory and clinical course of study. Required: Student Petition. Required: Acceptance into Dental Assistant program.

**DA-130 Clinical Practicum III**

8 credits, Spring

Supervised practice and improvement of advanced clinical skills in all areas of chairside dental assisting, laboratory procedures, specialties, radiology and Expanded Functions Dental Assisting (EFDA) procedures. Students report to their assigned site three days a week, for a minimum of twenty-four hours per week, for eleven weeks. Clinical competency skills in business office procedures will also be completed in this term (minimum of forty-four hours). Students will be responsible to meet ten hours of community service. Students will also participate in two seminars during the term. Required: Student Petition. Required: Acceptance into Dental Assistant program. Prerequisites: DA-120 with a C or better.

**DA-135 Pharmacology/Medical Emergencies**

2 credits, Spring

This course is an introduction to pharmacology, common drugs used in dentistry, drug agencies, regulations, and drug actions. The properties of anesthetic, topical anesthetics, and desensitizing agents will also be covered. An in-depth level knowledge of the identification, response and management of medical and dental emergencies in the dental office will be taught utilizing educational manikin simulators. Required: Student Petition. Required: Acceptance into Dental Assistant program.

**DA-145 Dental Office Procedures**

2 credits, Spring

This course prepares the student for basic knowledge of dental office procedures to include dental charting. Introduction of dental software, management of patient information, maintenance and retention of business records, inventory and recall systems. Written and oral communication are taught to prepare students for employment opportunities. Required: Student Petition. Required: Acceptance into Dental Assistant program.

**DMC****Digital Media Communications****DMC-100 Introduction to Media Arts**

3 credits, Fall

Presents an overview of career opportunities in the media industry. Introduces basic principles common to success in the media industry, common media industry entrance strategies, health and safety best practices and the history of the industry from film to online media. In addition, this course will cover basic theories behind what shapes and drives the media industry.

**DMC-104 Digital Video Editing**

4 credits, Fall/Winter/Spring

Students will utilize video editing skills. These skills will include logging and capturing raw video, assembly of shots on a time line, and the use of effects in the creation of a final video sequence. Along with text generation, audio balancing, audio sweetening and video compositing, this course will offer students an in-depth overview of the video editing process. Course will explore the history of film editing and the theory behind various forms of film and video editing. Lab component included. Recommended: WRD-090 or placement in WR-121.

**DMC-106 Animation & Motion Graphics I**

3 credits, Fall/Winter

Introduction to the fundamentals of animation and motion graphics design. This project-based course will explore experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn the basics of industry standard 3D and compositing software to create successful VFX, 3D Animation, and Motion Graphics projects. Recommended: ART-225, ART-226, DMC-104, and DMC-221.

**DMC-107 Animation & Motion Graphics II**

3 credits, Spring

This project-based course will explore intermediate aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn intermediate features of Adobe After Effects to create successful motion graphics projects. Prerequisites: DMC-106. Recommended: ART-225, ART-226, DMC-104, and DMC-221. Previous experience with computer graphics and digital video.

**DMC-108 Animation & Motion Graphics III**

3 credits, Spring

Continuation of the process of animation and motion graphics design. This project-based course explores advanced aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. The course presents advanced aspects of industry standard 3D and compositing software to create successful VFX, 3D Animation, and Motion Graphics projects. Prerequisites: DMC-107.

**DMC-109 Introduction to Stop Motion Animation**

3 credits, Not Offered Every Term

Introduces basic stop motion animation tools, materials, techniques and elements of storyboarding, scripting, narrative development, compositing, special effects and audio integration into a final group film. Assignments include character development, rigging, set creation, photography, video compositing, and audio recording and synching. Uses digital cameras and industry-standard stop motion software. Recommended: DMC-106 and ART-225.

**DMC-131 Interactive Design for Games**

3 credits, Not Offered Every Term

This course introduces many of the skills and processes used to create games and other interactive media for the web. Students will create webpages featuring media including sound, animation and 3D graphics. Students will design and program interactivity using JavaScript, the native programming language of web browsers. Students will gain a solid foundation in interactive design and programming. Recommended: DMC-106 or Student Petition.

**DMC-132 Video Game 3D Modeling**

3 credits, Not Offered Every Term

This course is intended for students interested in pursuing a career in 3D modeling and/or 3D Video Game Art Production. Upon completion of the course, students will have a working knowledge of tools and navigation in industry-standard 3D modeling software along with techniques and pipeline familiarity in video game art production. Students will also learn the importance of deadlines, file management and organization. Recommended: DMC-104 or DMC-106 or DMC-107.

**DMC-133 Introduction to Game Engines and Platforms (Beginning)**

3 credits, Not Offered Every Term

This course provides students with an overview and practical introduction to creating games and other interactive experiences, such as simulations, educational content and even artistic media. Topics covered include: the game creation process, developing a critical understanding of games, basic programming skills, creating digital game assets, and interactive platforms such as WebGL and Unity3D. Recommended: DMC-106.

**DMC-147 Music, Sound & Moviemaking**

1 credit, Fall/Winter/Spring

Presents the basic components of designing, shooting, recording audio, and post production of movies as well as the history and theory that has led to contemporary film production.

**DMC-194 Introduction to Film**

4 credits, Not Offered Every Year

Viewing, discussion, and analysis of films from a variety of eras and cultures. Students will learn to analyze a film beyond its surface meaning, drawing on film aesthetics, technology, history, and theory. The interpretive and critical thinking skills they develop can be applied to a variety of modern media. Recommended: WRD-098 or placement in WR-121.

**DMC-195 American Film**

4 credits, Winter

This course will focus on the history and theory of American filmmaking from 1895 to the present. Film will be reviewed as a visual language and an evolving art form that expresses and influences American culture. Recommended: WRD-098 or placement in WR-121.

**DMC-205 Directing for Film & Video**

3 credits, Winter

This course provides students interested in filmmaking the opportunity to develop the skills needed to successfully direct films and performances specifically for the screen. Recommended: DMC-104, DMC-264, and WR-121.

**DMC-221 Introduction to 2D Animation: Design & Techniques**

3 credits, Winter/Spring

Introduces the principles of 2D digital animation using the latest industry standard software. The course will emphasize design and physical principles, analytical skills, and creativity. Students will learn the fundamental principles of animation, character and environment design, FX animation, and basic narrative development, in order to create successful animated projects. Recommended: CS-198 or ART-225 or equivalent experience.

**DMC-222 Advanced 2D Animation: Design & Techniques**

3 credits, Spring

Covers advanced principles of 2D animation using the latest industry standard software. The course will emphasize professional workflow and techniques of animation production for multimedia platforms. This includes visual development and pre-production, advanced character design and physics, advanced environment design, FX animation and post-production, portfolio presentation, and industry expectations. Prerequisites: DMC-221 or Student Petition.

**DMC-230 Documentary Film Production**

4 credits, Winter

Introduction to the concepts, fundamentals and production of documentary film making. This lecture/lab course will explore traditions and new technological approaches to creating digital documentary films. Recommended: DMC-104 and DMC-194. Previous experience with film studies and digital video.

**DMC-233 Game Engines and Platforms (Intermediate)**

3 credits, Not Offered Every Term

This course provides students who have completed DMC-133 with an opportunity to expand and enhance their skills in creating games and interactivity, while exploring more advanced and complex projects. Topics covered include: designing and developing 3D games and interactivity, designing for touch and mobile interfaces, and professional practice. Students will complete projects that involve designing and developing a complete original 3D game prototype, both independently and as part of a team. Prerequisites: DMC-133.

**DMC-242 Field Recording for Media**

1 credit, Spring

This course offers students interested in recording and sweetening audio for film an opportunity to work with student film crews during the shooting and editing process.

**DMC-247 Sound for Media**

3 credits, Fall/Spring

Introduction to sound as related to film making, animation, and video games. Students will have the opportunity to create and assemble sound for media into a finished product. Explores the basic components of commercial film/video, animation, and game production as they relate to sound. Recommended: Experience using a DAW (Digital Audio Workstation) or video editing software.

**DMC-264 Digital Filmmaking**

4 credits, Fall

Explores the process of translating a written script into a digital film via pre-production, lighting, shooting, and post-video production. Recommended: WRD-090 or placement in WRD-098, WRD-098 or placement in WR-121, or Student Petition.

**DMC-265 Advanced Digital Filmmaking**

4 credits, Spring

This course emphasizes advanced filmmaking skills. Students will produce short films from written scripts. Prerequisites: DMC-104 or Student Petition. Recommended: WRD-090 or placement in WRD-098, WRD-098 or placement in WR-121.

**DMC-280 Digital Media Communications/CWE**3-6 credits, Fall/Winter/Spring/  
Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of media studies. Variable Credit: 3-6 credits. Required: Student Petition. Corequisites: CWE-281.



### **DMC-291 Digital Media Communications Portfolio Project I**

3 credits, Winter/Spring

This course is an individual portfolio project class for Digital Media Communications (DMC) students. Students create an original finished work representative of one of the focus areas included in the DMC program. Students will develop a professional online portfolio (website) that represents their skills in their chosen DMC focus area in preparation for internships and employment. The process of portfolio production at this level includes planning for, refining and completing a project, presentation of the completed work, and project assessment. Prerequisites: DMC-100 and DMC-104. Recommended: Two courses from a DMC Focus Area.

### **DMC-292 Digital Media Communications Portfolio Project II**

3 credits, Winter/Spring

This course is a group-focused portfolio project class for Digital Media Communications (DMC) students. The purpose of this course is to provide students the opportunity to combine their skills, knowledge, and special interests in development of a collaboratively planned and produced original work representative of more than one of the focus areas in the DMC program. The process of portfolio production at this level includes working with peers in designing, planning, refining and completing a group project. Students will also further develop their professional online portfolio (website) to represent their skills in their DMC focus area in preparation for internships and employment. Prerequisites: DMC-291.

## **EC**

### **Economics**

#### **EC-200 Introduction to Economics**

4 credits, Not Offered Every Term

General introduction to microeconomics as applied to individuals and firms and to macroeconomics as applied to the operation of the economy as a whole. Course topics include economic decision making, economic systems, supply and demand models, price determination, elasticity, household income, business ownership, profit maximization, production functions and costs, and competition and market structures. Also includes goals and problems of the macro economy such as fiscal policy and budgets, the role of financial institutions, money creation, and monetary theory and policy. Recommended: WRD-090 or placement in WRD-098.

#### **EC-201 Principles of Economics: MICRO**

4 credits, Fall/Winter/Spring/Summer

Focuses on micro-economic theory dealing with the behavior of individuals and profit-maximizing firms in market structures with varying degrees of completion. Coverage includes price theory, international trade, consumer behavior, the theory of the firm, and the potential role of government in affecting market outcomes. Prerequisites: MTH-020 or placement in MTH-098. Prerequisite or Corequisite: WRD-098 or placement in WR-121. Recommended: Sequence of EC-201 and EC-202 taken in order.

#### **EC-202 Principles of Economics: MACRO**

4 credits, Fall/Winter/Spring/Summer  
Introduction to economic theory, policy, and institutions. Focuses on macro-economic theory, scarcity, production, money, unemployment, inflation, and international finance. Prerequisites: MTH-020 or placement in MTH-050 or MTH-060. Prerequisite or Corequisite: WRD-098 or placement in WR-121. Recommended: Sequence of EC-201 and EC-202 taken in order.

## **ECE**

### **Early Childhood Education**

#### **ECE-121 Observation and Guidance I in ECE Settings**

4 credits, Winter

Course is designed to help students explore in depth observation and recording techniques of children's development and learning and to examine various child guidance techniques for children from birth - 3rd grade. Students will be provided with strategies to assist them in providing positive guidance to children in a variety of settings and situations.

#### **ECE-139 Program Management in ECE**

1 credit, Not Offered Every Term

Focuses on planning and evaluating an early childhood program's specific goals (short and long term) for working with children and their families. Emphasis on administrative tasks such as meeting state and national standards and requirements, maintaining records, and striving for continuous improvement in program quality.

#### **ECE-142 Media, Technology and the Influences on Child Development**

1 credit, Not Offered Every Term

Focuses on the implementation and influences of media and technology on the development of the young child. Emphasizes analysis of media and technology tools for effectiveness in supporting the development of young children.

#### **ECE-143 Kindergarten Readiness**

1 credit, Not Offered Every Term

Introduces core concepts of kindergarten readiness, including outcomes that are focused in on Pre-K as well as strategies for children as they prepare for kindergarten.

#### **ECE-144 Working With the Gifted Young Child**

1 credit, Not Offered Every Term

Focuses on understanding the needs of the gifted young child and selecting strategies for supporting their development individually as well as in group settings.

**ECE-150 Introduction to Early Childhood Education & Family Studies**

3 credits, Fall

Focuses on the history of early childhood education and the prominent theorists that have significantly contributed to the field. The types of programs that serve young children, birth-age 8, and their families will be examined. State and national standards in early childhood education and family studies will be explored.

**ECE-154 Language & Literacy Development**

3 credits, Winter

Focuses on language and literacy development of children from birth-age 8. The research foundation and components of language and literacy development will be examined. Practical strategies for promoting optimal development will be emphasized.

**ECE-177 Maximizing the Outdoors in ECE Curriculum**

3 credits, Spring

Focuses on how to plan, create, and implement effective outdoor learning experiences. Topics include the benefits of using the outdoors to build a child's interest in the environment and expand understanding of the world while fostering divergent thinking and creativity. Prerequisites: ECE-240.

**ECE-179 The Professional in Early Childhood Education and Family Studies**

2 credits, Spring

Focuses on the role of the professional in Early Childhood Education (ECE) and is individualized to meet the unique professional development needs of each student. Students will receive information on the National Association for the Education of Young Children's Code of Ethical Conduct and information on what it means to be an ECE Professional. Students will also create a professional portfolio to demonstrate their commitment to professionalism.

**ECE-221 Observation & Guidance II in ECE Settings**

4 credits, Spring

Designed to help students explore in greater depth the observation and guidance of children from birth-3rd grade within the classroom environment. In this more advanced course, the student focuses on additional observation and guidance techniques for observing groups of children and addresses challenging behaviors and other issues within the early childhood environment. The practitioner's role in using observation to promote their own development and to assist in the development of the children is explored in depth. Prerequisites: ECE-121.

**ECE-235 Nutrition, Music & Movement in Early Childhood Education**

3 credits, Fall

Course focuses on factors that contribute to childhood obesity. Students explore current standards and evidence-based practices in nutrition education, movement and music in early childhood and explore ways to incorporate developmentally appropriate nutrition, music and movement education into the early childhood environment and curriculum.

**ECE-239 Helping Children and Families Cope With Stress**

3 credits, Fall

Focuses on stressors in society that can affect children and families including environmental stress, divorce and death. Effective strategies teachers can use to support children and families during times of stress are included.

**ECE-240 Environments and Curriculum Planning**

3 credits, Winter

Focuses on an introduction of creating learning environments and curriculum for children from three years old through five years old in home or center-based programs. Course covers theories and relationships between physical and social space, activities, experiences, and materials. Students are introduced to the use of developmentally and culturally appropriate practices in planning and selecting environments and curriculum for young children.

**ECE-241 Environments and Curriculum Planning: Infants and Toddlers**

3 credits, Fall

Builds upon knowledge and skills learned in ECE-240: Environments and Curriculum Planning. Emphasis is on application of research-based strategies to implement and evaluate early childhood environments and curriculum for children from birth-three years old. Focus is on integrating content knowledge throughout all classroom activities.

**ECE-280 Early Childhood Education/CWE**

2-6 credits, Spring/Summer

Cooperative work experience. Provides students with on-the-job experience in the field of early childhood education. Students will work nine hours a week in pre-approved educational settings that serve children from six weeks old through age eight. Variable Credit: 2-6 credits. Required: Student Petition. Prerequisites: ECE-121, ECE-150, and ECE-154. Corequisites: CWE-281.

**ECE-289 The Project Approach in Early Childhood Education**

1 credit, Winter

Designed to help participants explore in depth The Project Approach methodology. They will become familiar with the steps involved in setting up this integrated approach to learning within their own classrooms, while acquiring knowledge on how this study method supports preschool children's learning in all domains: social, emotional, cognitive, physical and language-literacy.

**ECE-291 Practicum II**

4 credits, Winter

Focuses on field experience for students in a variety of educational settings, paralleling duties regularly assigned to early childhood educators. This course allows students to apply knowledge, methods, and skills gained from early childhood education and family studies courses. The seminar covers classroom experiences, best practices and assessment techniques. Required: Student Petition. Prerequisites: ECE-121, ECE-150, ECE-280, HDF-225, and HDF-247.

**ECE-292 Practicum III**

4 credits, Spring

Focuses on field experiences for early childhood education students in a variety of educational settings, serving children from birth through kindergarten. This course allows students to deepen and apply their knowledge, methods, and skills gained from early childhood education and family studies courses as well as the previous terms of practicum and CWE. The seminar covers continuing observation/assessment, assisting the supervising teacher in implementing an integrated approach to curriculum with attention paid to working with diverse children and their families. Students will complete their professional portfolio in this course, documenting how they have achieved the program learning outcomes. Required: Student Petition. Prerequisites: ECE-154, ECE-240, ED-254, ECE-291, and HDF-240.

**ED****Education****ED-100 Introduction to Education**

4 credits, Fall/Winter/Spring

Examines career options and pathways in the field of education. Explores the history of and current issues impacting the American educational system. Provides an overview of diversity in educational settings and the characteristics of effective schools and teachers.

**ED-113 Instructional Strategies in Reading & Language Arts**

3 credits, Fall

Provides foundational knowledge for the teaching of literacy skills in pre-Kindergarten through secondary settings. Addresses foundations of literacy as well as the developmental stages of literacy. Focuses on instructional strategies for teaching reading and writing to diverse student populations.

**ED-114 Instructional Strategies in Math & Science**

3 credits, Spring

Introduces the development of math and science concepts and presents a systematic approach to math and science instruction. Emphasis is on linking math and science instruction and assessment to content standards.

**ED-130 Comprehensive Classroom Management**

3 credits, Fall

Focuses on creating positive classroom and school climates, organizing and managing classrooms, improving instruction, dealing with classroom discipline problems, developing individualized plans for students experiencing behavioral problems, and developing school-wide student management programs.

**ED-131 Instructional Strategies**

3 credits, Spring

Examines the knowledge, skills, and characteristics of effective teachers. Focuses on successful instructional planning and delivery of curriculum. Covers teacher-centered and student-centered instructional strategies and ways to differentiate instruction for diverse learners.

**ED-150 Creative Activities for Children**

3 credits, Summer

The class focuses on understanding and implementing a developmental approach to creative activities for young children; involves hands-on experience with a variety of mediums including art, music and movement, and creative dramatics.

**ED-169 Overview of Students With Special Needs**

3 credits, Winter

Provides an introduction to the categories of disability described in the Individuals with Disabilities Education Act (IDEA). Topics include definitions under federal law, implications in school settings, and intervention strategies to meet students' special needs.

**ED-200 Foundations of Education**

3 credits, Winter

Provides an overview of the American educational system, including historical, legal and philosophical foundations of education. Explores the financing, governance and organization of education in the U.S. Examines the roles and ethical obligations of professional educators.

**ED-220 Introduction to CTE in Oregon**

3 credits, Fall

Provides an introduction to the field of Career and Technical Education (CTE) in Oregon. Examines the historical and legislative foundations of CTE in the United States. Discusses the role of special populations in CTE programs. Provides an overview of high quality CTE programs, CTE licensure preparation, and student organizations. Addresses current trends and issues in the field.

**ED-229 Learning & Development**

3 credits, Winter

Focuses on foundational ideas, concepts, principles, and theories in the field of educational psychology that have a significant influence on educational practice. Provides students with an overview of psychological theories regarding human development, intelligence, motivation, and the learning process. Students learn how to apply strategies and techniques derived from these theories in the classroom.

**ED-235 Educational Technology**

3 credits, Fall

Prepares students for the use of media and technology in educational settings. Develops an understanding of the role of media in learning and methods for incorporating technology in instruction. Focuses on the use of technology tools to support how teachers create and evaluate learning experiences for students.

**ED-246 School, Family & Community Relations**

4 credits, Summer

This course focuses on the knowledge and skills to work effectively with families and community professionals in early childhood education (6 weeks of age through 3rd grade). Emphasis is on building and maintaining positive relationships to foster cooperation and mutual respect between early childhood professionals and the families of the children with whom they are working.

**ED-254 Instructional Strategies for Dual Language Learners**

3 credits, Winter

Examines pedagogical and cultural approaches which lead to successful development of English language skills and content knowledge for children who speak a home language other than English.

**ED-258 Multicultural Education**

3 credits, Spring

Covers the philosophy, activities, and techniques appropriate to a culturally sensitive classroom for students from pre-Kindergarten through post-secondary. Emphasizes understanding the impact of culture on individual perception and learning and group dynamics.

**ED-280 Practicum/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Supervised practicum in an elementary, secondary, or post-secondary educational setting. Participants will utilize and develop knowledge, skills, and attitudes relevant to working in schools and with students. Allows students to gain classroom experience and apply knowledge gained in education courses. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**EET****Electronic Systems Technology****EET-112 Electronic Equipment and Assembly I**

1 credit, Fall

This is the first course in a three course sequence. Focus is on building and testing simple DC prototype circuits. Covers DC power supplies, DMMs, breadboarding, resistor codes, and capacitor codes. Spreadsheets will be used to organize and analyze data.

**EET-113 Electronic Equipment and Assembly II**

1 credit, Winter

This is the second course in a three course sequence. Exploration of oscilloscope and function generator functions to create and measure time varying signals. Spreadsheets are used to analyze and plot experimental data. Create circuits using PCB software. Prerequisites: EET-112.

**EET-114 Electronic Equipment and Assembly III**

1 credit, Spring

This is the third course in a three course sequence with a focus on soldering skills. Through-hole and SMT techniques will be introduced. Prerequisites: EET-113.

**EET-127 Semiconductor Circuits I**

2 credits, Fall

Introduction to the basic concepts of semiconductor devices. Various types of diodes and diode applications will be studied. Industry standard devices will be used. Prerequisites: EET-142. Recommended: MTH-112.

**EET-137 Electrical Fundamentals I**

4 credits, Fall

Introduction to the basic concepts of voltage, current, resistance and their relationships in DC circuits. Use SI units, engineering notation and prefixes. Analysis of series, parallel and series-parallel circuits will be made using Ohm's & Kirchhoff's laws. Prerequisite Or Corequisite: EET-112 and MTH-095.

**EET-139 Principles of Troubleshooting I**

2 credits, Fall

Emphasizes theories and practices useful in troubleshooting failures in electrical applications. Focuses on the overall philosophy and strategy of troubleshooting, drawing applications from residential and varied industrial situations. Includes laboratory projects. Recommended Prerequisite Or Corequisite: EET-112, and EET-137 or MFG-130.

**EET-141 Electrical Fundamentals II**

4 credits, Winter

Learn methods of electrical circuit analysis, using proper DC theorems. Study energy storage elements including inductors and capacitors. Transient analysis of RC and RL circuits will be studied. Prerequisites: EET-137. Prerequisite Or Corequisite: EET-113. Recommended Prerequisite Or Corequisite: MTH-111.

**EET-142 Electrical Fundamentals III**

4 credits, Spring

Covers sinusoidal functions and phasors and complex impedance. Analyze systems to determine AC circuit parameters and complex power. Circuits contain voltage and current sources, resistors, inductors, and transformers. Prerequisites: EET-141. Recommended Prerequisite Or Corequisite: MTH-112.

**EET-157 Digital Logic I**

3 credits, Fall

An introduction to digital logic principles, numbering systems & conversions and gate operations. Using principles, circuit analysis will be used to minimize logic networks. Industry standard devices will be used. Prerequisite Or Corequisite: EET-112. Recommended: MTH-065.

**EET-215 Technical Mechanics**

3 credits, Fall

Introduction to mechanics. Covers theory of force, work, torque, energy, power, strength, and motion. Vectors and simple machines provide applications for these concepts. Prerequisites: MTH-080 or MTH-112 or EET-142.

**EET-225 Mechatronics I**

2 credits, Winter

This course explores automation of industrial systems. Students will study the fundamental components of industrial motion control, relay circuits, stepper and servo motors; and power transmission components. Prerequisites: EET-215.

**EET-227 Semiconductor Circuits II**

3 credits, Winter

Second in a series concentrating on the application, design and circuit analysis of circuits using transistors. Industry standard devices will be used. Prerequisites: EET-127.

**EET-230 Laser and Fiber Optics**

3 credits, Spring

This course focuses on basic theory and practice of optical communication, lasers and fiber optics. Students study optical signals, optical fibers, optical components, testing and instrumentation, optical networks, etc. as well as general characteristics of LEDs, lasers, laser excitation, semiconductor lasers, etc. related to optical communication.

**EET-233 Programmable Logic Controllers I**

3 credits, Winter

Study of basic skills necessary to program, install and maintain industrial control systems utilizing programmable logic controllers. Course content lays a foundation of hardwired relay control systems and components, and then builds on this for an understanding of programmable logic controller (PLC) systems. Recommended: MFG-130.

**EET-234 Programmable Logic Controllers II**

3 credits, Spring

An advanced course of study that will develop the student's understanding of Programmable Logic Controllers (PLC) in more detailed Industrial applications through lectures, labs and hands-on examples. This course will emphasize advanced PLC functions and data sets, networking schemes and human machine interfaces. Prerequisites: EET-233.

**EET-235 Mechatronics II**

2 credits, Spring

This course expands on advanced electromechanical principles with applications in manufacturing and industrial systems. Students will study the applications of Proportional Integral Differential (PID) controllers for motion and process control and the electromechanical components that are integral to industrial machinery. Prerequisites: EET-225.

**EET-239 Principles of Troubleshooting II**

2 credits, Fall

Covers advanced applications of diagnosis, maintenance and repair of systems. Includes preventative maintenance, applied statistical process, and AC/DC motor controls. Prerequisites: IMT-139 or EET-139; EET-141 or MFG-131. Recommended: IMT-223.

**EET-250 Linear Circuits**

3 credits, Spring

Introduction to the operation and functions of operational amplifiers and linear devices. Design and circuit analysis of op-amps, comparators, converters and special purpose linear devices. Industry standard devices will be used. Prerequisites: EET-227.

**EET-252 Control Systems**

3 credits, Winter

Covers basic control system and subsystems used controllers, sensors, transducers, motion and motor control systems. Recommended: EET-127 and EET-157.

**EET-254 Introduction to Microcontrollers**

3 credits, Spring

Introduction to processor architecture and microcontrollers. Internal structure, registers, busses, control unit. Clock, machine and instruction cycling timing, interrupts and DMA. Instruction set, mnemonics, functions, and assembly language programming. Interfacing to external memory and I/O on-chip peripherals. Prerequisites: EET-157. Recommended: EET-257.

**EET-257 Digital Logic II**

3 credits, Winter

Bus systems and computer peripherals & systems using latches, registers, counters, and memory circuits are developed and analyzed. Prerequisites: EET-157.

**EFA****Educational Focus Area****EFA-101S Introduction to STEM**

2 credits, Fall

This course will feature activities, demonstrations, and real world experiences in STEM fields, including environmental science, biology, chemistry, geology, physics, engineering, computer science, and mathematics. Students will gain an understanding of academic and career options and get a taste of what further study will look like in each STEM discipline.

**EL****Study Skills****EL-103 Taking Effective Notes**

1 credit, Not Offered Every Term

Designed to help students develop effective note-taking skills. Several note-taking systems are introduced and practiced. Prerequisites: WRD-080 or placement in WRD-090.

**EL-111 College Study Skills**

3 credits, Not Offered Every Term

Emphasizes time management, listening/notetaking, testing skills/anxiety, college resources, learning styles, reading strategies, textbook reading, and concentration skills. Prerequisites: WRD-080 or placement in WRD-090.

**EMP****Emergency Management Professional****EMP-201 Introduction to Homeland Security and Emergency Management**

4 credits, Not Offered Every Term

This course introduces Homeland Security and Emergency Management (HSEM) as a profession. The course begins with the historical context of HSEM and provides a foundation for the many disciplines within the field including threats and hazards analysis, hazard mitigation, emergency preparedness, response and recovery. The course also provides an overview of current issues, policies, best practices and lessons learned.

**EMP-202 Threat and Hazard Assessment for Emergency Management Professionals**

3 credits, Not Offered Every Term

This course demonstrates the importance of risk reduction programs and the history of Threats and Hazard Identification and Risk Assessment (THIRA). Emergency management professionals must assess weaknesses and establish programs to reduce risks during preparedness for the whole community. This course will give students a basic understanding of risk management and risk prevention in emergency management.

**EMP-204 Foundations of Emergency Planning**

4 credits, Not Offered Every Term

In order for a community to be truly prepared to respond to any type of natural and/or man-made disaster, it must develop effective emergency planning. This course will provide an introduction to the multiple aspects of disaster planning. It explores the patterns of human disaster behavior, social psychology and communication as well as the basics of generic planning actions, planning concepts, implementation, and action.

**EMP-206 Hazard Mitigation**

3 credits, Not Offered Every Term

This course will introduce the major principles involved in preparing for and mitigating the impact of hazards in the context of emergency and disaster management. Topics include key features and characteristics of various hazards, both natural and man-made, the risk assessment process that is used to determine community vulnerability, and in-depth discussion of hazard mitigation planning.

**EMP-208 Disaster Response and Recovery**

4 credits, Not Offered Every Term

The purpose of this course is to enable students to understand and think critically about response and recovery operations in the profession of emergency management. Students will utilize problem based learning by analyzing actual disaster events and applying the theories, principals, and practice of response and recovery. In addition, students will learn about the issues faced by vulnerable populations and how to address the unique needs during disaster response and recovery.

**EMP-210 Developing and Managing Volunteer Resources**

4 credits, Not Offered Every Term

This course will focus on methods and procedures for involving private-sector organizations and volunteers in emergency management programs in ways which benefit the whole community. The focus of the course is on maximizing the effectiveness of volunteer resources by implementing a people-oriented system that addresses defining volunteer roles, designing a plan of action, recruiting volunteers, training individuals who volunteer and motivation and maintenance of a successful program. Participants will acquire skills and knowledge to make appropriate volunteer assignments that enhance the effectiveness of an integrated emergency management system.

**EMP-212 Public Health and Medical Emergency Management**

3 credits, Not Offered Every Term

The course examines the issues and concepts that make up the field of public health and how public health agencies and organizations prepare for and support disaster response. It will examine the intersection of security and public health policy, threats to public health, legal and policy infrastructure and the tools that are available to improve preparedness, response and recovery efforts.

**EMP-214 Technology in Emergency Management**

4 credits, Not Offered Every Term

This class provides a detailed overview of technology and how it is applied in the field of emergency management. Students will learn how to utilize technology in emergency planning, response, recovery and mitigation efforts and they'll uncover the key elements that must be in place for technology to enhance the emergency management process. Course topics include Web Emergency Operations Center (WEOC), using technology with training and exercises, reverse 911 notification systems, video conferencing/downlinks and Geographic Information System (GIS) and remote sensing capabilities.

**EMP-216 Emergency Management Laws and Ethics**

2 credits, Not Offered Every Term

This course is designed to give the student an overview of various statutes, regulations, constitutional law, and common law associated with homeland security and emergency management. Students will examine local, state and federal laws and the authority of the Department of Homeland Security's Federal Emergency Management Agency (FEMA). Major topics covered include civil rights, international anti-terrorism efforts, the Homeland Security Act of 2002, and the Patriot Act. Students will be introduced to the legalities and ethics relevant to organizing for counterterrorism, investigating terrorism and other national security threats, crisis and consequence management.

**EMP-218 Public Information Officer and External Affairs**

2 credits, Not Offered Every Term

This course is designed to familiarize students with the concepts underlying the Public Information Officer (PIO) role. This course provides a basic understanding of the PIO function. Provide those in executive level roles the necessary knowledge of PIO roles and responsibilities during an emergency.

**EMP-220 Introduction to Emergency Management Public Administration and Policy**

2 credits, Not Offered Every Term

This course provides an overview of the structure and issues surrounding public service. Course participants will examine the context of public administration: the political system, the role of federalism, bureaucratic politics and power, and the various theories of administration that guide public managers. Lessons will be drawn from the most current applications of emergency management public administration, such as recent response efforts and Homeland Security. Prerequisites: WR-121.

**EMP-222 Terrorism Awareness and Response**

2 credits, Not Offered Every Term

Provides current and relevant information about terrorism, terrorist behavior, homeland security policies and dilemmas and how to deal effectively with threats and the consequences of attacks. Students will gain insight into the key players involved in emergency management, local and state issues and interacting and working with the Federal Emergency Management Agency (FEMA) and other federal agencies. Course components include identifying terrorism, causes of terrorism, preventing terrorist attacks, responding to terrorism attacks and avoiding communication and leadership collapse.

**EMP-224 Science of Disasters**

2 credits, Not Offered Every Term

This course will introduce students to scientific concepts and principles in several key areas related to natural and human-caused disasters. The course focuses on common and emerging threats that provide a basis for understanding the science of disaster.

**EMP-226 Business Continuity Fundamentals**

4 credits, Not Offered Every Term

This course provides a foundation for business continuity management and continuity of operations planning (COOP). Topics include business continuity initiation, risk evaluation and control, business impact analysis, developing business continuity strategies and plans, developing training and exercise programs, coordinating with external agencies, and exposure to current case studies.

**EMT*****Emergency Medical Technology*****EMT-101 Emergency Medical Technician Part I**  
6 credits, Fall/Winter

This course develops skills and training at the basic life support (BLS) level. Includes signs and symptoms of illness and injury, initial treatment, stabilization, and transportation. Focus on: airway management, and patient assessment. Required: Student Petition. Required: AHA BLS Provider CPR certification. Prerequisites: WRD-098 or placement in WR-121. Prerequisites: MTH-060 with a C or better or placement in MTH-065. Recommended: EMT-105 and MA-110.

**EMT-102 Emergency Medical Technician Part II**  
6 credits, Winter/Spring

Continuation of EMT-101. This course focuses on: medical and trauma emergencies, special patient populations and EMS operations. Includes 20 hours of observational time in an emergency department and with an EMS unit. Prerequisites: EMT-101.

**EMT-105 Introduction to Emergency Medical Services**

3 credits, Fall

Introduces the student to Emergency Medical Services (EMS). Examines the career path for paramedics. Explores structure and function of EMS systems. Includes roles and responsibilities, operations, medical-legal consideration, stress management, blood borne pathogens, and other Oregon specific content.

**EMT-107 EMT Rescue**

3 credits, Spring

Covers EMS operational areas including rescue practices, standard and rapid patient extrication, introduction to heavy extrication, control of rescue operations, scene safety, and more. Prerequisites: EMT-101.

**EMT-108 Emergency Response Patient Transportation**

2 credits, Spring

Covers ambulance operations, laws, maintenance and safety, emergency response driving and route planning. Required: Required credits for the CCC one-year EMT certificate program and for students transferring to two-year AAS-EMT program. Prerequisites: EMT-101.

**EMT-109 Emergency Response Communication/Documentation**

2 credits, Winter

Covers principles of communication via verbal, written and electronic modes in the provision of EMS. Documentation of the elements of patient assessment, patient care and transport, communication systems, radio types, reports, codes and correct techniques. Required: Required credits for the CCC one-year EMT certificate program. Required for transferring to two-year AAS-EMT program. Prerequisites: EMT-101.

**ENG*****English Literature*****ENG-104 Introduction to Literature: Fiction**  
4 credits, Summer/Fall

An introduction to American and international short stories, with a focus on the fundamental elements of fiction. Also examines the historical, social, and cultural background and significance of fiction. Students engage in literary analysis, use literary terminology, and develop personal and scholarly responses to fiction. Recommended: WRD-098 or placement in WR-121.

**ENG-105 Introduction to Literature: Drama**  
4 credits, Winter

An introduction to American and international drama, emphasizing reading, appreciation, discussion, and literary analysis. Focuses on defining the genre and elements of drama, encouraging students' personal reflections and cultural understanding, incorporating relevant literary theories, and practicing the close reading and analysis of dramatic works. Recommended: WRD-098 or placement in WR-121.

**ENG-106 Introduction to Literature: Poetry**  
4 credits, Spring/Summer

An introduction to multicultural poetry in English and translation. Explores the elements of poetry and examines the historical, social, and cultural significance of various poems. Students engage in literary analysis, use literary terminology, and develop both personal and analytical responses to poetry. Recommended: WRD-098 or placement in WR-121.

**ENG-107 World Literature: Ancient Through Classical Times**

4 credits, Fall

Literature of the ancient through classical worlds: epic, lyric, and dramatic literature. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature. Recommended: WRD-098 or placement in WR-121.

**ENG-108 World Literature: Early Middle Ages through the 18th Century**

4 credits, Winter

Literature of the Early Middle Ages through the 18th Century, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature. Recommended: WRD-098 or placement in WR-121.

**ENG-109 World Literature: The 19th through 21st Centuries**

4 credits, Spring

Literature of the 19th through 21st centuries, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature. Recommended: WRD-098 or placement in WR-121.

**ENG-116 Introduction to Literature: Comics**

4 credits, Fall/Winter

Examines the intrinsic literary and artistic qualities of comics, as well as their connections to classic literature, and the literature and other art they have inspired. Recommended: WRD-098 or placement in WR-121.

**ENG-121 Mystery Fiction**

4 credits, Fall

An introduction to detective/mystery fiction. Students will read, discuss, and analyze short stories by writers such as Edgar Allan Poe, Agatha Christie, and Walter Mosley. Recommended: WRD-098 or placement in WR-121.

**ENG-130 Leadership in Literature**

4 credits, Not Offered Every Year  
Examines the nature of leadership by analyzing characters in major literary works. Recommended: WRD-098 or placement in WR-121.

**ENG-194 Introduction to Film**

4 credits, Not Offered Every Year  
Viewing, discussion, and analysis of films from a variety of eras and cultures. Students will learn to analyze a film beyond its surface meaning, drawing on film aesthetics, technology, history, and theory. The interpretive and critical thinking skills they develop can be applied to a variety of modern media. Recommended: WRD-098 or placement in WR-121.

**ENG-195 American Film**

4 credits, Winter  
This course will focus on the history and theory of American filmmaking from 1895 to the present. Film will be viewed as a visual language and an evolving art form that expresses and influences American culture. Recommended: WRD-098 or placement in WR-121.

**ENG-201 Shakespeare**

4 credits, Fall  
Selected comedies, histories, tragedies, romances, and poetry. Students focus on reading and discussion, literary interpretation, and relating Shakespeare's work to their lives and the world. Works from ENG-201 will not be repeated in CCC's other Shakespeare course, ENG-202. Recommended: WRD-098 or placement in WR-121.

**ENG-202 Shakespeare**

4 credits, Winter  
Selected comedies, histories, tragedies, romances, and poetry. Students focus on reading and discussion, literary interpretation, and relating Shakespeare's work to their lives and the world. Study of significant plays and sonnets. Works from ENG-202 will not be repeated in CCC's other Shakespeare course, ENG-201. Recommended: WRD-098 or placement in WR-121.

**ENG-204 British Literature: Ancient to Enlightenment**

4 credits, Fall  
Representative study of British literature, including major works, writers, and literary forms, from its beginnings through the eighteenth century. Readings from the Anglo-Saxon, Middle English, Renaissance, Restoration, and Enlightenment periods. Recommended: WRD-098 or placement in WR-121.

**ENG-205 British Literature: Romantic to Contemporary**

4 credits, Winter  
Representative study of British literature, including major works, writers, and literary forms. Nineteenth century through modern, with readings from the Romantic, Victorian, and modern periods. Recommended: WRD-098 or placement in WR-121.

**ENG-213 U.S. Latino Literature**

4 credits, Not Offered Every Year  
Survey of U.S. Latino/a literature of various genres and historical periods. Literary contributions by writers of varied cultural heritage, including Chicano, Cuban-American, Puerto-Rican and more. Prerequisites: WRD-098 or placement in WR-121.

**ENG-218 Arthurian Literature**

4 credits, Not Offered Every Year  
Origins and development of Arthurian literature from medieval to modern times. Examines topics such as knight-hood, chivalry, the hero's quest, abduction and adultery, courtly love, the Round Table. Prerequisites: WRD-098 or placement in WR-121.

**ENG-225 Creative Nonfiction Literature**

4 credits, Not Offered Every Year  
Discussion and analysis of various types of creative nonfiction such as literary journalism, memoirs, nature or science writing, literary travel writing, and personal essays. Prerequisites: WRD-098 or placement in WR-121.

**ENG-226 Popular Literature**

4 credits, Fall/Spring  
Focuses on genre work within prose, film, comics and/or videogames that is specific in theme and targeted towards a more mass audience than traditional literary work. Genres might include but not necessarily be limited to horror, fantasy, science fiction, romance, and/or westerns. May be repeated for up to 8 credits. Recommended: WRD-098 or placement in WR-121.

**ENG-230 Documentary Film**

4 credits, Not Offered Every Term  
This course will focus on documentary film history and theory. Students will learn to analyze documentary film and appreciate its value as a mode of cultural expression and influence. Recommended: WRD-098 or placement in WR-121.

**ENG-240 Native American Mythology**

4 credits, Not Offered Every Year  
Explores Native American mythology and its cultural, social, and literary significance; views Native American mythology in its historical and geographic positions and in the larger context of world literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology. Recommended: WRD-098 or placement in WR-121.

**ENG-241 Norse Mythology**

4 credits, Not Offered Every Year  
Explores Norse mythology and its cultural, social, and literary significance; views Norse mythology in its historical and geographic positions and in the larger context of Western literary traditions; introduces theoretical approaches to mythology and basic literary elements and terminology; considers how studying myth affects and influences reading other works; connects Norse myth to medieval European and modern fantasy literature. Recommended: WRD-098 or placement in WR-121.

**ENG-250 Greek Mythology**

4 credits, Not Offered Every Year  
Explores the historical, cultural, social, and literary significance of Greek myths; views Greek mythology in its historical and geographic positions and in the larger context of Western civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology. Recommended: WRD-098 or placement in WR-121.



**ENG-251 Celtic Mythology**

4 credits, Not Offered Every Year

Explores the historical, cultural, social, and literary significance of Celtic myths; views Celtic mythology in its historical and geographic positions and in the larger context of Western civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology. Recommended: WRD-098 or placement in WR-121.

**ENG-252 Hindu Mythology**

4 credits, Not Offered Every Year

Explores the historical, cultural, social, and literary significance of Hindu myths; views Hindu mythology in its historical and geographic positions and in the larger context of world civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology. Recommended: WRD-098 or placement in WR-121.

**ENG-253 American Literature: Pre-Columbian to Civil War**

4 credits, Winter

Representative readings from pre-European contact to 1865. Surveys the development of American poetry, fiction, drama, and prose through the study of the works of both major and lesser known writers. Recommended: WRD-098 or placement in WR-121.

**ENG-254 American Literature: 1865 to Present**

4 credits, Spring

Representative readings from the 1865 to present day. Surveys the development of American fiction, nonfiction, poetry, and drama through the study of the works of both major and lesser known writers. Recommended: WRD-098 or placement in WR-121.

**ENG-255 American Literature: Topics in American Literature**

4 credits, Not Offered Every Year

Focus on selected authors and works of American fiction, poetry, nonfiction, and drama. Theme changes yearly. Recommended: WRD-098 or placement in WR-121.

**ENG-260 Introduction to Women Writers**

4 credits, Spring

The study of the works (e.g. plays, poems, fiction, new media) created by women writers, both classic and contemporary, with an emphasis on women's evolving social, historical, and economic roles. Recommended: WRD-098 or placement in WR-121.

**ENG-261 Literature of Science Fiction**

4 credits, Not Offered Every Year

Introduction to the literature of science fiction in print and film, exploring historical and contemporary themes. The course covers a variety of authors and films, and examines the art and function of this genre of fiction. Recommended: WRD-098 or placement in WR-121.

**ENG-266 The Literature of War**

4 credits, Spring

Fiction, poetry, nonfiction, comics, and other genres dealing with the experience and aftermath of war. Shifting historical and cultural contexts will be paired with innovations in aesthetic responses. Texts may include Homer, Crane, Remarque, Heller, O'Brien, Silko, Satrapi, and Sacco. Recommended: WRD-098 or placement in WR-121.

**ENG-270 Introduction to Literary Criticism**

4 credits, Spring

Students will closely study famous literary texts through a variety of critical approaches such as structuralism, Feminist criticism, Psychoanalytic criticism, Marxist criticism, and queer theory. Recommended: WRD-098 or placement in WR-121.

**ENG-271 World Literature: Ancient Through Classical Times**

4 credits, Fall

Literature of the ancient through classical worlds: epic, lyric, and dramatic literature. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature. Recommended: WRD-098 or placement in WR-121.

**ENG-272 World Literature: Early Middle Ages through the 18th Century**

4 credits, Winter

Literature of the Early Middle Ages through the 18th Century, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature. Recommended: WRD-098 or placement in WR-121.

**ENG-273 World Literature: the 19th Through 21st Centuries**

4 credits, Spring

Literature of the 19th through 21st centuries, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature. Recommended: WRD-098 or placement in WR-121.

**ENG-280 English/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience in the field of English studies. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**ENG-295 Revolutionary Film**

4 credits, Not Offered Every Term

This course focuses on the study of revolutionary styles of filmmaking from around the world that were not only socially transformative, but changed the way movies are made. Recommended: WRD-098 or placement in WR-121.

**ENG-296 Adaptation: Literature Into Film**

4 credits, Not Offered Every Term

Adaptation: Literature into Film is an exploration into the study of the art of transforming literary texts into films. The course focuses on various literary genres such as the novel, the short story, the play, and the nonfiction event, and analyzes the process of transforming these stories from page to screen, thereby creating a new art form. Note: This is a literature and not a writing class. Recommended: WRD-098 or placement in WR-121.

**ENG-297 A.S. Degree Portfolio**

1 credit, Fall/Winter/Spring/Summer  
This course provides the opportunity for A.S. Degree students to revise, edit, reflect upon, and compile their best work from their various focus areas to meet the outcomes for the program and prepare for transfer to a university. Required: Students must be in the second year of their course of study, and have the majority of their focus area and transfer requirements complete.

**ENGR****Engineering****ENGR-111 Introduction to Engineering**

3 credits, Fall/Winter/Spring  
Introduction to the basic ideas and tools of the engineering profession. An exploration of career and education options within the field, and the skills needed to achieve career goals. Methods of engineering analysis, design, and problem solving culminating in a design project. The class will cover all facets of engineering design, including background research, requirement specification and prioritization, development, prototype construction, testing, and evaluation for future redesigns. Prerequisite or Corequisite: MTH-112 or higher.

**ENGR-112 Engineering Programming**

3 credits, Fall/Winter/Spring  
Introduction to basic scientific and engineering computing using MATLAB. Covers methods of engineering analysis, design, and problem solving with computational tools. Emphasis on developing proficiency in writing functions and programs. Prerequisite or Corequisite: MTH-112 or higher.

**ENGR-115 Engineering Graphics**

3 credits, Spring  
This course will emphasize the practical application of engineering graphics techniques for the design, maintenance, and modification of mechanical parts and assemblies. Students will both generate new models based on design intent and translate existing physical objects into graphical 3D models, documenting their work with 2D engineering drawings according to ASME standards. Includes isometric views, dimensioning, and simulation. Prerequisite or Corequisite: MTH-112 or higher.

**ENGR-171 Digital Logic**

4 credits, Winter  
The first course in digital design covers basic logic gates, Boolean algebra, Karnaugh mapping, number systems, timing analysis, and state machines. Students will become proficient with computational tools including schematic capture programs and circuit simulators. Prerequisites: MTH-111.

**ENGR-201 Electrical Fundamentals**

4 credits, Spring  
A study of basic electrical circuit theory. Analysis of voltage and current relationships. Covers circuit parameters of resistance, inductance, and capacitance. Includes basic DC, AC, and natural response of circuits. This course is not intended for Electrical or Computer Engineering majors. Prerequisites: MTH-252. Corequisites: ENGR-201L.

**ENGR-211 Statics**

4 credits, Fall  
First term of engineering mechanics sequence. This course focuses on the study of force systems acting on articles or rigid bodies under equilibrium conditions. Prerequisites: MTH-252. Prerequisite or Corequisite: PH-211.

**ENGR-212 Dynamics**

4 credits, Winter  
Kinematics, kinetics, work-energy, and impulse-momentum relationships of engineering systems. The course examines the fundamental principles of Newton's laws of motion, with applications to basic particles and rigid bodies in one, two, and three dimensions. Prerequisites: ENGR-211 and PH-211.

**ENGR-213 Strength of Materials**

4 credits, Spring  
Introduces the relation of externally applied loads and their internal effects on deformable bodies, such as columns, shafts, beams and statically indeterminate structures or systems made up of such members. Prerequisites: ENGR-211.

**ENGR-221 Electrical Circuit Analysis I**

4 credits, Fall  
Designed to give the student a thorough understanding of basic electrical circuit theory, this course covers voltage and current relationships and fundamental methods of circuit analysis. Electrical circuit parameters such as resistance, inductance, and capacitance will be examined through theory and laboratory experiments. Prerequisites: MTH-252. Corequisites: ENGR-221L.

**ENGR-221L Electrical Circuit Analysis I Lab**

0 credits, Fall  
Lab Course for ENGR-221. Must be taken concurrently with ENGR-221. Corequisites: ENGR-221.

**ENGR-222 Electrical Circuit Analysis II**

4 credits, Winter  
Expands upon the techniques of circuit analysis begun in Circuits I through theory and laboratory experiments. The course covers the time response of first- and second-order circuits, the steady-state circuit behavior of circuits driven by sinusoidal sources, three phase circuits, AC power, electrical motors, and the use of Laplace transforms to analyze the transient and steady-state behavior for a number of signal types. Prerequisites: ENGR-221. Corequisites: ENGR-222L.

**ENGR-223 Electrical Circuit Analysis III**

4 credits, Spring  
Final course in the electrical circuits sequence. The main emphases of the course are frequency response of circuits, the design and analysis of filters, Laplace transform analysis, Fourier analysis, and two-port networks. The laboratory portion of the course will consist of one project involving significant design and analysis. Prerequisites: ENGR-222. Corequisites: ENGR-223L.

**ENGR-231 Properties of Materials**

4 credits, Winter  
This course is an introduction to materials science, a field that describes the behavior of materials by utilizing principles of chemistry and physics to engineer new materials and predict their resultant properties. The course will focus on describing the microscopic physical and chemical structure of materials and relating that structure to the macroscopic thermal, electrical, and mechanical properties. The course will also cover the connection between atomic/crystal structure and materials processing. Prerequisites: CH-221.

**ENGR-271 Digital Systems**

4 credits, Spring  
The second course in digital design covers synchronous state machine circuits, microprocessor architecture, shift register devices, and the design of memory systems. Prerequisites: ENGR-171.

**ESH*****Environmental Safety & Health*****ESH-100 Environmental Regulations**

1-3 credits, Fall/Winter/Spring  
An overview of environmental regulations as they pertain to industry, agriculture, schools and the general public. Major points of environmental law, federal and state regulatory statutes and regulations, and the agencies responsible for their enforcement. This course has been developed with the cooperation of DEQ. Variable Credit: 1-3 credits.

**ESL*****English as a Second Language*****ESL-012 Beginning ESL**

0 credits, Fall/Winter/Spring/Summer  
English language learners speak and listen to simple words, phrases, questions, statements and commands using common English vocabulary in simple, highly-structured tasks. Required: Student Petition.

**ESL-014 Beginning Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read and write the alphabet, sight words, and simple sentences. Required: Student Petition.

**ESL-015 Beginning Reading, Writing and Grammar**

0 credits, Fall/Winter/Spring/Summer  
English language learners are introduced to the basic language necessary to function in day-to-day American society; language functions are taught in the contexts of work, family and community. Required: Student Petition.

**ESL-016 Integrated Beginning ESL**

0 credits, Fall/Winter/Spring/Summer  
English language learners are introduced to the basic language necessary to function in day-to-day American society; language functions are taught in the contexts of work, family and community. Required: Student Petition.

**ESL-020 Upper Beginning Grammar**

0 credits, Fall/Winter/Spring/Summer  
English language learners study and practice basic verb forms (simple present and present progressive), and adverbs of frequency in written and spoken English. Required: Student Petition.

**ESL-024 Upper Beginning Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read short texts to improve reading skills, write simple, compound, and complex sentences, and write related sentences in paragraph form for the contexts of school, work, family and community. Required: Student Petition.

**ESL-025 Upper Beginning Writing**

0 credits, Not Offered Every Term  
English language learners write simple, compound, and complex sentences, and write related sentences in paragraph form for the contexts of school, work, family and community. Required: Student Petition.

**ESL-030 Intermediate Grammar A**

0 credits, Not Offered Every Term  
One of a two-part series. English language learners study and practice simple present, present progressive, and future verb forms and modals of ability, permission, and advice. Required: Student Petition.

**ESL-031 Intermediate Grammar B**

0 credits, Not Offered Every Term  
One of a two-part series. English language learners study and practice simple past and past progressive verb forms, present perfect verb forms with time expressions, and comparative and superlative adjectives and adverbs. Required: Student Petition.

**ESL-032 Intermediate Conversation**

0 credits, Fall/Winter/Spring/Summer  
English language learners study and practice speaking and listening skills and strategies in structured tasks to improve fluency in the contexts of school, work, family and community. Required: Student Petition.

**ESL-034 Intermediate Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read a variety of texts to improve reading skills, and write paragraphs focused on a single topic developed with logically organized facts and details for the contexts of school, work, family and community. Required: Student Petition.

**ESL-035 Intermediate Writing**

0 credits, Not Offered Every Term  
English language learners write paragraphs focused on a single topic developed with logically organized facts and details for the contexts of school, work, family and community. Required: Student Petition.

**ESL-042 Upper Intermediate Conversation**

0 credits, Fall/Winter/Spring/Summer  
English language learners study and practice speaking and listening skills and strategies for independent communication to improve fluency in the contexts of school, work, family and community. Required: Student Petition.

**ESL-044 Upper Intermediate Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read a variety of texts to improve reading skills, and produce basic multi-paragraph texts for the contexts of school, work, family and community. Required: Student Petition.

**ESL-046 Editing for Better Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners improve their writing through editing. They also engage in extended reading to provide a context for writing. Required: Student Petition.

**ESL-047 Editing Part 1**

0 credits, Not Offered Every Year  
English language learners improve their writing through editing. Required: Student Petition.

**ESL-048 Editing Part 2**

0 credits, Not Offered Every Year  
English language learners improve their writing through editing. Required: Student Petition.

**ESL-050 Advanced Grammar A**

0 credits, Not Offered Every Term  
One of a three-part series. English language learners study and practice modals, adverb clauses, and discourse connectors in written and spoken English. Required: Student Petition.

**ESL-051 Advanced Grammar B**

0 credits, Not Offered Every Term  
One of a three-part series. English language learners study and practice count/non-count nouns, definite/indefinite articles, and noun clauses in written and spoken English. Required: Student Petition.

**ESL-052 Advanced Communication Skills 1**

0 credits, Not Offered Every Term  
English language learners practice speaking and listening strategies for effective communication in discussions, presentations, lectures, note-taking, and group projects. The course builds vocabulary, critical thinking skills, and an awareness of non-verbal communication. The focus of this course is to prepare students for college success. Required: Student Petition.

**ESL-053 Advanced Communication Skills 2**

0 credits, Not Offered Every Term  
English language learners practice speaking and listening strategies for effective communication for discussions, interviews, presentations, and note-taking to improve fluency in speaking and listening. Students will study the important effect intonation and body language have on meaning, build vocabulary and critical thinking skills, and develop confidence in speaking with purpose. The focus of this course is to prepare students for success in the workplace and community. Required: Student Petition.

**ESL-054 Advanced Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners develop writing skills including summarizing, response writing, and paraphrasing, and improve writing fluency. Develop reading skills and fluency through reading a range of texts on a variety of topics. Required: Student Petition.

**ESL-055 Advanced Grammar C**

0 credits, Not Offered Every Term  
One of a three-part series. English language learners study and practice gerunds, infinitives, passive voice, and adjective clauses in written and spoken English. Required: Student Petition.

**ESL-060 Vocabulary Building 1**

0 credits, Not Offered Every Term  
One of a two-part series. English language learners develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and the Academic Word List, and develop their vocabulary acquisition skills. Required: Student Petition.

**ESL-061 Vocabulary Building 2**

0 credits, Not Offered Every Term  
One of a two-part series. English language learners develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and the Academic Word List, and develop their vocabulary acquisition skills. Required: Student Petition.

**ESL-062 ESL Reading 1**

0 credits, Not Offered Every Term  
English language learners at all levels improve their reading fluency and expand and solidify their English vocabulary as needed for more advanced ESL and everyday life. Required: Student Petition.

**ESL-063 ESL Reading 2**

0 credits, Not Offered Every Term  
English language learners at all levels improve their reading fluency and expand and solidify their English vocabulary as needed for more advanced ESL and everyday life. The course can be repeated, as learners read texts of progressively greater challenge, up to the college reading level. Students who have completed ESL Reading 1 will develop their reading skills at a higher level in ESL Reading 2. Required: Student Petition.

**ESL-067 Spelling**

0 credits, Not Offered Every Term  
English language learners learn about and practice English spelling patterns and rules and individualize instruction to address spelling challenges. Required: Student Petition.

**ESL-068 Bridge to Computers**

0 credits, Not Offered Every Term  
English language learners beyond the beginning level are introduced to computer technology. The course includes an overview of computer components and terminology and an introduction to applications such as word processing, Internet, e-mail, presentation, and other software. English reading, writing, speaking, and listening skills are developed through a variety of computer projects and interactive classroom work. Required: Student Petition.

**ESL-069 Pronunciation**

0 credits, Not Offered Every Year  
English language learners develop pronunciation skills and knowledge to improve speech clarity, listening effectiveness, and pronunciation of written words. Required: Student Petition.

**ESL-071 ESL Career Goal Lab**

0 credits, Fall/Winter/Spring/Summer  
English Language Learners who have already identified a career they want to pursue engage in goal setting around academic programs or other training, financial planning and support planning. The course may be taken multiple terms until the student successfully transitions to an academic program, a training program, or a living wage job. Required: Student Petition.

**ESL-077 ESL Transition Lab: Career Exploration**

0 credits, Fall/Winter/Spring/Summer  
English Language Learners explore career options by assessing their strengths, exploring resources that explain employment requirements and trends connected to their areas of interest, and exploring resources that explain academic programs connected to their areas of interest. The course may be taken multiple terms until the student identifies a specific career goal. Required: Student Petition.

**ESL-080 ESL Tutoring**

0 credits, Fall/Winter/Spring/Summer  
Adult students meet one-on-one or in a small group with a tutor to focus on specific learning needs. The sessions are held in various public places throughout Clackamas County, such as libraries, schools, churches and the college campuses and outreach sites. Tutors help set student goals and a plan of learning. This class is a supplement to other ESL, ABE, or GED classes. Required: Student Petition.

**ESL-082 Assess/Evaluate New Students**

0 credits, Fall/Winter/Spring/Summer  
New students in the ESL program receive information about classes offered, departmental and college policies, college services available, campus facilities, student responsibilities, and community resources. Students are tested to determine their language levels and class placement. Required: Student Petition.

**ESL-083 Educational Planning for Returning Students**

0 credits, Fall/Winter/Spring/Summer  
Designed for returning students in the ESL program at CCC. Students meet with their instructors to review their progress, revisit their goals, register for classes, and learn how to transition to other educational and training opportunities at the college and in other community programs. Required: Student Petition.

**ESL-088 Beginning ESL Computer Skills Lab**

0 credits, Fall/Winter/Spring/Summer  
English language learners acquire basic computer skills. Required: Student Petition.

**ESL-091 ESL Skills Lab**

0 credits, Fall/Winter/Spring/Summer  
English language learners are provided the opportunity to intensify their learning at each level. Students build on the language learning skills and strategies acquired during the previous and current terms. Required: Student Petition.

**ESR*****Environmental Science*****ESR-171 Environmental Science**

4 credits, Fall  
Introduction to environmental science issues, the scientific method, systems and feedback, biogeochemical cycles, human population growth, communities and ecosystems, productivity and energy flow, world food supply, the environmental effects of agriculture, and endangered species. Recommended: MTH-060 or MTH-098 with a C or better, or placement in MTH-065. WRD-098 or placement in WR-121.

**ESR-172 Environmental Science**

4 credits, Winter  
Introduction to planning of parks and preserves, the scientific method, energy principles, fossil fuel recovery and use, renewable energy sources, nuclear energy, environmental toxicology, air pollution, ocean acidification, indoor air pollution, ozone depletion, and climate change. Recommended: MTH-060 with a C or better or placement in MTH-065. WRD-098 or placement in WR-121.

**ESR-173 Environmental Science**

4 credits, Spring  
Introduction to minerals and the environment, the scientific method, environmental economics, waste management, biological diversity, biogeography and invasive species, ecological succession and ecosystem restoration, water management, water pollution, urban environments, and environmental sustainability. Recommended: MTH-060 or MTH-098 with a C or better, or placement in MTH-065. WRD-098.

**FN*****Food & Nutrition*****FN-110 Personal Nutrition**

3 credits, Summer/Winter/Spring  
This course explores how nutrition affects health and fitness for the individual and the family. Students apply knowledge of nutrition guidelines to analyze personal diet and improve current food preparation and habits. It is a basic nutrition course for students with little or no science background.

**FN-225 Nutrition**

4 credits, Fall/Winter/Spring/Summer  
This course explores the role of nutrients in the development and maintenance of a healthy body. The course examines the relationship between diet and health. Students apply knowledge of nutritional adequacy through computer-aided diet analysis. It discusses current nutrition recommendations and controversies. The course meets requirements for most nursing programs. Recommended: A strong background in anatomy and physiology, biology or chemistry.

**FR*****French*****FR-101 First-Year French I**

4 credits, Fall  
First term of a three-term foundational, multimedia course in beginning French designed to give students basic communicative proficiency in the target language. Students will practice all four skills: listening, speaking, reading, and writing. Special attention will be paid to pronunciation, essential grammar structures, and attendant cultural elements. Student learning is assessed through a variety of guided exercises and assignments, interactive activities, homework, tests and quizzes, and other class projects and participation.

**FR-102 First-Year French II**

4 credits, Winter  
Second term of a three-term foundational, multimedia course in beginning French designed to give students basic communicative proficiency in the target language. Students will practice all four skills: listening, speaking, reading, and writing. Special attention will be paid to pronunciation, essential grammar structures, and attendant cultural elements. Student learning is assessed through a variety of guided exercises and assignments, interactive activities, homework, tests and quizzes, and other class projects and participation. Prerequisites: FR-101.

**FR-103 First-Year French III**

4 credits, Spring  
Third term of a three-term foundational, multimedia course in beginning French designed to give students basic communicative proficiency in the target language. Students will practice all four skills: listening, speaking, reading, and writing. Special attention will be paid to pronunciation, essential grammar structures, and attendant cultural elements. Student learning is assessed through a variety of guided exercises and assignments, interactive activities, homework, tests and quizzes, and other class projects and participation. Prerequisites: FR-102.

**FR-201 Second-Year French I**

4 credits, Fall

The second year of academic French expands on first-year French in the review of essential grammar structures, the use of more advanced grammar, and cross-cultural discussion and analysis. Emphasis is on communication skills, stressing both oral proficiency and written expression. Prerequisites: FR-103.

**FR-202 Second-Year French II**

4 credits, Winter

The second year of academic French expands on first-year French in the review of essential grammar structures, the use of more advanced grammar, and cross-cultural discussion and analysis. Emphasis is on communication skills, stressing both oral proficiency and written expression. Prerequisites: FR-201.

**FR-203 Second-Year French III**

4 credits, Spring

The second year of academic French expands on first-year French in the review of essential grammar structures, the use of more advanced grammar, and cross-cultural discussion and analysis. Emphasis is on communication skills, stressing both oral proficiency and written expression. Prerequisites: FR-202.

**FR-211 Intermediate French Conversation**

3 credits, Fall

First term of a three-term course in intermediate development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, role-plays, debates, pair and group work. Major topics and level of conversational difficulty will parallel FR-201. Prerequisites: FR-103 with a C or better.

**FR-212 Intermediate French Conversation**

3 credits, Winter

Second term of a three-term course in intermediate development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, role-plays, debates, pair and group work. Major topics and level of conversational difficulty will parallel FR-202. Prerequisites: FR-103 with a C or better, or Student Petition.

**FR-213 Intermediate French Conversation**

3 credits, Spring

Third term of a three-term course in intermediate development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, role-plays, debates, pair and group work. Major topics and level of conversational difficulty will parallel FR-203. Prerequisites: FR-103 with a C or better, or Student Petition.

**FRP*****Fire Science (Wildland)*****FRP-101 Basic Forest Management**

3 credits, Not Offered Every Term

An introduction to forestry and forest land management activities and practices related to forest stewardship. Students will gain an understanding of how social, economic and environmental values influence current forest policies and regulations. Corequisites: FRP-102.

**FRP-102 Basic Forest Management Lab**

1 credit, Not Offered Every Term

Provides lab exercises in a forest setting experience using forest management field equipment discussed in FRP-101. The Lab includes the use of diameter tape, loggers tape, compass, clinometer, increment borer and wedge prism to measure tree height, diameter, tree age, diameter increment and basal area. Through the use of fixed plot and variable plot forest sampling methods the students will gain the skills to gather data necessary to calculate stocking, volume and growth. Corequisites: FRP-101.

**FRP-107 Wildland Fire Career Portfolio**

3 credits, Not Offered Every Term

Create a job-marketing tool that reflects knowledge, education and skills related to the wildland fire industry. Students will create a portfolio consisting of a resume, reference letters, work samples and other content that accurately reflects the student's employment fitness. Skills and knowledge related to the field of wildland fire and or forest management will be discussed.

**FRP-110 Basic Wildland Fire Investigation (FI-110)**

1 credit, Not Offered Every Term

An introduction to the roles and responsibilities of wildland firefighters in determining a wildland fire origin. Students will identify the wildland fire categories, wildland fire behavior and the initial observations made by the firefighter responding to and arriving at a wildland fire. The primary emphasis of this course is to teach sound wildland fire observations and origin scene protection practices that enable first responders to a wildland fire scene to perform proper origin scene protection procedures. Prerequisites: FRP-130 (S-130/S-190/L-180).

**FRP-130 Introduction to Wildland Firefighting (S-130/S-190/L-180)**

2 credits, Not Offered Every Term

This course provides an introduction to wildland fire behavior, wildland firefighting safety and wildland firefighting techniques. The course covers the basic skills necessary to fight wildland fires under close supervision. NWCG Courses completed in class include S-130, S-190, L-180, IS-100 and IS-700. Also includes the Work Capacity Test (WCT) which is needed for employment.

**FRP-131 Advanced Firefighter Training (S-131/S-133)**

1 credit, Not Offered Every Term

This course provides instruction that meets the training requirements for the Wildland Firefighter Type 1 position and/or Incident Commander Type 5 (ICT5). Prerequisites: FRP-130 (S-130/S-190/L-180).

**FRP-200 Basic Incident Command System (I-100, I-200, IS-700, IS-800)**

4 credits, Not Offered Every Term

Introduces the knowledge and skills to function efficiently during an incident or event within the Incident Command System (ICS). National Incident Management System (NIMS) and the National Response Framework (NRF) provide a consistent nationwide template to enable all government, private-sector, and nongovernmental organizations to work together during domestic incidents.

**FRP-201 Advanced Forest Management**

3 credits, Not Offered Every Term  
Discuss and explore forest management concepts and principles through classroom lecture and field trips. Contrast forest management decisions made dependent on public or private landowner objections, economics and federal and state laws that provide for protection of soil, water, air, fish, and wildlife and consideration of recreation values. Prerequisites: FRP-101 and FRP-102.

**FRP-203 Introduction to Incident Information**

3 credits, Not Offered Every Year  
The purpose of this course is to provide students with the skills and knowledge needed to serve as a Public Information Officer (PIOF). The course covers establishing and maintaining an incident information operation, communicating with internal and external audiences, working with the news media, handling special situations, and long-term planning and strategy.

**FRP-205 Forest Management Assessments and Inventories**

3 credits, Not Offered Every Term  
Provides forest technicians, wildland firefighters and other natural resource employees the ability to conduct various forest management and recreation management assessments and inventories. The students will gain the ability to gather data for making forest management and fire management decisions. Prerequisites: FRP-101 and FRP-102. Recommended: FRP-201.

**FRP-211 Portable Pumps and Water Use (S-211)**

2 credits, Not Offered Every Term  
This course is designed to provide knowledge and skills to design, setup, operate, troubleshoot, and shut down portable water delivery systems. The focus is on portable pumps; it does not address water delivery for engines. There is also a field exercise where students will apply what they learned in the classroom. Recommended: FRP-130 (S-130/S-190/L-180).

**FRP-212 Wildfire Power Saws (S-212)**

2 credits, Not Offered Every Term  
This course introduces the function, maintenance and use of internal combustion engine powered chain saws in wildland firefighting operations. Required: Student Petition. Required: Adequate footwear will be required for the field exercises. Adequate footwear includes a boot or hiking style boot with a minimum of an 8 inch upper (measured from the bottom of the heel to the top of the shoe/boot). A traction type (non-slip) tread is also required. The boot may either lace up or zip up. Students must be at least 18 years of age. Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-250.

**FRP-215 Fire Operations in the Urban Interface (S-215)**

2 credits, Not Offered Every Term  
Assess homes and structures located in and around forest, grass and brush lands (urban interface) for vulnerability to a wildland fire. Prerequisites: FRP-130 (S-130/S-190/L-180).

**FRP-219 Wildland Firing Operations (S-219)**

2 credits, Not Offered Every Term  
The Wildland Firing Operations course introduces the roles and responsibilities of a firing boss (FIRB) and outlines duties of other personnel who may engage firing operations. The course discusses and illustrates common firing devices and techniques. Although comprehensive in nature, the course work is not a substitute for the dynamic fire environment. The course provides students with important information regarding general tasks required to be successful. Course equivalent to NWCG S-219 Firing Operations. Prerequisites: FRP-131 (S-131/S-133).

**FRP-220 Initial Attack Incident Commander (S-200)**

1 credit, Not Offered Every Term  
The course provides the students with the basic skills to lead the initial attack resources on small non-complex wildland fires. Provides the students with the knowledge to prepare for the assignment, assess the fire, determine resources needs and complete the necessary administrative functions required of an Initial Attack Incident Commander Type 4. Prerequisites: FRP-130 (S-130/S-190/L-180).

**FRP-230 Crew Boss (Single Resource) (S-230)**

2 credits, Not Offered Every Term  
The course provides the student with the basic knowledge required of a crew leader (Crew Boss) of a wildland firefighting crew for a Federal, State or Contract Agency fire organization. Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-131 (S-131/S-133). Recommended: FRP-290 (S-290) in the last 3 years.

**FRP-231 Engine Boss (Single Resource) (S-231)**

1 credit, Not Offered Every Term  
The course provides the student with the required initial training to perform as a wildland fire engine supervisor (Engine Boss) for a Federal, State or Contact Fire organization. Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-131 (S-131/S-133). Recommended: FRP-290 (S-290) in the last 3 years. Corequisites: FRP-230 (S-230).

**FRP-239 Division/Group Supervisor (S-339)**

2 credits, Not Offered Every Term  
This course prepares students to perform in the role of Division/Group Supervisor (DIVS). Instruction covers the specific tasks of the Division/Group Supervisor. Recommended: FRP-259 (S-330) and FRP-296 (S-390).

**FRP-243 Wilderness I: Psychology of Survival**

3 credits, Not Offered Every Term  
Students will learn how to be mentally and physically prepared to survive in the wilderness, the psychology of surviving, and what to do when things go wrong. The course explores the science of survival. Other topics include disaster preparedness, ropes and knots, heat related injuries and increasing situation awareness.

**FRP-244 Wilderness II: Basic Land Navigation (S-244)**

3 credits, Not Offered Every Term  
Students will learn how to make and document field observations, how to produce hand drawn and GPS field maps, and how to navigate using a map, compass, and GPS.

**FRP-245 Wilderness III: Weather of the Northwest**

2 credits, Not Offered Every Term  
This course covers the basics of weather forecasting, especially as it relates to the weather of the Northwest.

**FRP-246 Wilderness IV: Backcountry CPR/First Aid/AED**

2 credits, Not Offered Every Term

Introduction to general medical concepts and basic life support skills. It is targeted to the outdoor enthusiast on day trips or short adventures. Course results in CPR, first aid & AED certification.

**FRP-247 Survivor VII: Food, Water, Shelter & Fire**

1 credit, Not Offered Every Term

Learn and practice wilderness survival skills for the Pacific Northwest. Students construct shelters and fires, identify edible plants, track animals, sterilize drinking water, and more. Multiple methods are covered including primitive and modern practices. Students build personal fire making and water filtration kits.

**FRP-248 Wilderness V: Introduction to Search and Rescue**

2 credits, Not Offered Every Term

This course introduces students to the philosophy, tactics, and operations of search and rescue techniques and strategies. It will also address how people behave and respond when they become lost.

**FRP-249 Followership to Leadership (L-280)**

2 credits, Spring

The course prepares the student for a basic field operations leadership role. Students will be able demonstrate basic leadership skills through interactive classroom discussions and scenario based exercises.

**FRP-250 Wilderness VI: Basic Tool Use and Care**

1 credit, Spring

Selection, operation, and maintenance of chain saws and hand tools to include shovels, Pulaski, single and double bit axes, hand saws, and various other tools used in forestry, firefighting and survival activities. Class includes a lab component.

**FRP-265 Wildland Fire Prevention Education 1 (P-101)**

3 credits, Winter

This course was developed as part of a multi-course national curriculum covering wildfire prevention. It is designed to provide a basic introduction of fire prevention principles and activities for fire prevention specialists, fire managers, public information officers and others who have wildland fire prevention, education, or mitigation responsibilities. Course equivalent to NWCG P-101 Fire Prevention Education 1. Prerequisites: FRP-130 (S-130/S-190/L-180).

**FRP-270 Basic Air Operations (S-270)**

1 credit, Not Offered Every Term

The course introduces students to basic air operations including the different types of aircraft used in wildland firefighting operations along with mission planning, risk management, safety, and communications.

**FRP-275 Wildland Fire Management 1**

4 credits, Fall

This course is designed to meet the needs of current and future unit level Fire Program Managers. Students will learn how to identify the basic principle, policies, and procedures to effectively and safely lead, plan, and implement a fire management program. The responsibilities of the Fire Program manager include program management and personal accountability are also covered in this course. Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-131 (S-131/S-133), FRP-249 (L-280), and WR-101 or WR-121.

**FRP-280 Wildland Fire CWE**

3 credits, Not Offered Every Term

Cooperative Work Experience. Provides students with on-the-job experience in the field of wildland firefighting. May be repeated for up to 6 credits. Required: Student Petition. Corequisites: CWE-281.

**FRP-285 Wildland Fire Facilitative Instructor (M-410)**

4 credits, Not Offered Every Term

This course helps students become effective facilitative instructors. This course improves training delivery and quality by presenting instructional methods with an emphasis on student-oriented adult training techniques. This course is designed for students to meet National Wildfire Coordinating Group (NWCG) instructor requirements. Prerequisites: FRP-130, and WR-101 or WR-121.

**FRP-290 Intermediate Wildland Fire Behavior (S-290)**

3 credits, Not Offered Every Term

This course provides the student with the basic skills to determine the characteristics of fuels (vegetation) when involved in a wildland fire, the effects weather has on a wildland fire, the various topographic features that impact wildland fire and the fire behavior patterns of a wildland fire. Prerequisites: FRP-130 (S-130/S-190/L-180).

**FRP-291 Fire Academy I**

3 credits, Not Offered Every Year

This course provides an introduction to fire incident related experience that fulfills the requirements of OR-OSHA and the Department of Public Safety Standards and Training for Entry-Level Firefighter.

**FRP-292 Fire Academy II**

3 credits, Not Offered Every Year

This course develops fire incident related experience that fulfills the requirements of OR-OSHA and the Department of Public Safety Standards and Training for Entry-Level Firefighter. Covers tools, procedures, techniques and safety precautions utilized by firefighters during fire ground operations. Includes comprehensive training in firefighting skills related to fire company evolutions. Involves transfer of knowledge obtained from classroom instruction to drill ground application during hands-on live fire training. Prerequisites: FRP-291.



**FRP-294 Intermediate Incident Command System (I-300)**

2 credits, Not Offered Every Term

This course focuses on ICS for supervisors in expanding incidents. ICS 300 outlines how the NIMS Command and Coordination component supports the management of expanding incidents as well as describes the incident management processes as prescribed by ICS.

This course has a threaded activity that will give students the opportunity to practice implementing the incident management process and create an Incident Action Plan (IAP) for a simulated expanding incident. Prerequisites: FRP-200 (I-100, I-200, IS-700, IS-800).

**FRP-296 Introduction to Wildland Fire Behavior Calculations (S-390)**

4 credits, Not Offered Every Term

This course introduces the students to the fire behavior calculations used to estimate wildland fire behavior and fire spread. Students will apply the calculations using graphs and scales based on modeling to determine the characteristics of fuels, the weather and topography that influences fire behavior and document these calculations using the manual methods. Prerequisites: FRP-290 (S-290).

**FST****Fire Science Technology****FST-202 Principles of Emergency Services**

3 credits, Fall

This course provides an overview of fire protection and emergency services to include: career opportunities in fire protection and related fields, culture and history of emergency services, fire loss analysis, organization and function of public and private fire protection services, fire departments as a part of local government, laws and regulations affecting the fire service, fire service nomenclature, specific fire protection functions, basic fire chemistry and physics, introduction to fire protection systems, introduction to fire strategy and tactics and life safety initiatives. FESHE course code: C0273.

**FST-204 Fire Protection Systems**

3 credits, Not Offered Every Term

This course provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers. FESHE course code: C0288.

**FST-206 Fire Behavior and Combustion**

3 credits, Not Offered Every Term

This course explores the theories and fundamentals of how and why fires start, spread, and are controlled. FESHE course code: C0276.

**FST-212 Fire Prevention**

3 credits, Not Offered Every Term

This course provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention, organization and operation of fire prevention bureau, use and application of codes and standards, plans review, fire inspections, fire and life safety education and fire investigation. FESHE course code: C0286.

**FST-214 Building Construction for Fire Protection**

3 credits, Not Offered Every Term

This course provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations and operating at emergencies. FESHE course code: C0275.

**FYE****First Year Experience (FYE)****FYE-101 First Year Experience Level I**

2 credits, Fall/Winter/Spring/Summer

This is the first course in a 3-course sequence designed to help students adjust to a new campus, connect with other students, understand college expectations and systems, and access services available through the college. The First Year Experience Level I course is designed to help students in developing relationships with students and faculty, and to build student behaviors for successfully completing classes and continuing college through to completion.

**FYE-102 First Year Experience Level II**

1 credit, Fall/Winter/Spring/Summer

This course is a second in the First Year Experience sequence offered to new CCC students. This course is designed for students who want to continue to delve in depth into future educational and career planning, financial aid and scholarships, applied study skills, and college and community resources. Prerequisites: FYE-101.

**FYE-103 First Year Experience Level III**

1 credit, Fall/Winter/Spring/Summer

This is the third course in the First Year Experience sequence. This course is designed to help students prepare for their future, including transferring to another school or university, how to search for employment, becoming proficient in the use of test taking skills, and how to break large projects and assignments into more manageable pieces for successful completion. Prerequisites: FYE-102.

**G****Geology****G-101 General Geology**

4 credits, Fall

For non-science majors. A lab course introducing geologic principles and concepts; Earth structure, igneous, sedimentary, and metamorphic rock environments, volcanic activity, and landforms. Lab requires students to identify ore minerals, rock forming minerals, igneous, metamorphic and sedimentary rocks. Recommended: WRD-090 or placement in WRD-098. Corequisites: G-101L.

**G-102 General Geology**

4 credits, Winter

For non-science majors. An introductory lab course that explores the Earth's systems and surface features. Systems/processes/hazards explored include rivers, mass wasting, glaciers, groundwater, and deserts. Labs focus on geologic and topographic maps and how they are used to understand geologic features and local geology. Recommended: WRD-090 or placement in WRD-098. Corequisites: G-102L.

**G-103 General Geology**

4 credits, Spring

For non-science majors. A lab course that examines the geological development of the North American continent through topics such as geologic time, plate tectonics, mountain building earthquakes/faults, and fossils. Examines important events in each geologic era and includes fossil ID, compass use, field techniques and GPS. Recommended: WRD-090 or placement in WRD-098. Corequisites: G-103L.

**G-145 Geology of the Pacific Northwest**

4 credits, Not Offered Every Year

An introductory lab course that explores the geology and historic development of Northwest with an emphasis on Oregon geology. Each of the geologic regions is examined by using basic geologic principles, rock types, hazards and the Northwest's tectonic history. Required: Two Saturday field trips.

**G-148 Volcanoes & Earthquakes**

4 credits, Not Offered Every Year

A lab course that examines the geological processes that create volcanoes and earthquakes and the hazards associated with them. Examines basic geologic features, monitoring techniques, hazards, prediction methods, and future events, using historic episodes of volcanic eruptions and earthquakes. Required: Two Saturday field trips.

**G-201 General Geology**

4 credits, Fall

For science majors. A lab course introducing geologic principles and concepts; weathering, soils, Earth structure, igneous, sedimentary, metamorphic rocks, volcanic activity, and landforms. Lab requires students to identify ore minerals, rock forming minerals, igneous, metamorphic and sedimentary rocks. Prerequisites: WRD-090 or placement in WRD-098. Corequisites: G-201L.

**G-202 General Geology**

4 credits, Winter

For science majors. A lab course that explores surface features of the Earth and the systems that form those features. Systems/processes/hazards explored include rivers, mass wasting, glaciers, groundwater and deserts. Topographic/geologic maps are used to understand geologic features and local geology. Prerequisites: G-201 with a C or better. Corequisites: G-202L.

**G-203 General Geology**

4 credits, Spring

For science majors. A lab course that examines the geological development of the North American continent through topics such as geologic time, plate tectonics, mountain building earthquakes/faults, and fossils. Examines important events in each geologic era and includes fossil ID, compass use, field techniques and GPS. Prerequisites: G-202 with a C or better. Recommended: MTH-065 or placement in MTH-080 or MTH-095. Corequisites: G-203L.

**GED****General Education Development****GED-011 GED in Espanol**

0 credits, Fall/Winter/Spring/Summer Instrucción del desarrollo de habilidades básicas ofrecida en español. El examen de diagnóstico determina las necesidades académicas del alumno. Entrada y salida de la clase todo el tiempo, se ofrece en el colegio principal: Se requiere el consentimiento del Instructor para registrarse. Basic academic skill-development instruction offered in Spanish. Diagnostic tests determine individual academic needs. Open-entry, open-exit class offered at Dye Learning Center. Required: Student Petition.

**GED-012 GED Preparation**

0 credits, Fall/Winter/Spring/Summer Basic academic skill development targeting skills needed to pass the 2014 GED test. Diagnostic tests determine individual academic needs. Open-entry, open-exit classes offered at Clackamas County Corrections Facility. Required: Student Petition.

**GED-015 GED Preparation**

0 credits, Fall/Winter/Spring/Summer Basic academic skill development preparing for the GED 2014 tests and transition to career or post-secondary education. Course focuses primarily on language arts, math and technology skills. Provides direction and support for transitioning students. Required: Student Petition.

**GED-049 Latino GED & Life Skills**

0 credits, Fall/Winter/Spring/Summer Desarrollo de habilidades académicas básicas, ofrecida en español con énfasis en los requerimientos para presentar el test del GED para obtener el certificado equivalente a la High School. También se enfoca en habilidades básicas de la vida, metas personales e interés de carreras. Se requiere el consentimiento del Instructor para registrarse. Offered in Spanish. Basic academic skill development with emphasis on requirements to take the GED test to obtain a high school equivalency certificate. Also focuses on basic life skills, personal and career goals and interests. Required: Student Petition.

**GEO****Geography****GEO-100 Introduction to Physical Geography**

4 credits, Fall/Winter/Spring/Summer  
Analyzes the physical elements of the Earth's surface and atmosphere. Focuses on natural processes that create physical diversity on the Earth including weather and climate, biosphere, soils and land-forms and explores how these influence human cultural settlement activities. Recommended: WRD-090 or placement in WRD-098.

**GEO-110 Cultural & Human Geography**

4 credits, Fall/Winter/Spring  
Introduces geographical perspectives on human population, agriculture, political pattern, language, religion, folk culture, popular culture, ethnic culture, urban development, industry, and transportation as these play out on the diverse landscapes of the world. Recommended: WRD-090 or placement in WRD-098.

**GEO-130 Introduction to Environmental Geography**

4 credits, Fall/Winter/Spring  
Explores the contemporary global environmental problems such as: overpopulation, over consumption, ozone layer depletion, pollution, acid rain, deforestation, desertification, and waste problems. Examines alternative sources of energy to fossil fuel and sustainable development strategies. Recommended: WRD-090 or placement in WRD-098.

**GEO-208 Geography of the United States & Canada**

4 credits, Fall/Winter/Spring  
Provides students with the fundamental geographical knowledge of the United States and Canada and their paths of development. Presents the spatial arrangement of culture, economics, politics, and the natural environment. Recommended: WRD-090 or placement in WRD-098.

**GEO-280 Geography/CWE**

2-6 credits, Fall/Winter/Spring  
Cooperative work experience. Provides students with on-the-job work experience in the field of geography. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**GER****German****GER-101 First-Year German I**

4 credits, Fall  
Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. First of a three-term 1st year sequence. Recommended: WRD-098 or placement in WR-121.

**GER-102 First-Year German II**

4 credits, Winter  
Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. Second of a three-term 1st year sequence. Prerequisites: GER-101 or Student Petition.

**GER-103 First-Year German III**

4 credits, Spring  
Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. Third of a three-term 1st year sequence. Prerequisites: GER-102.

**GER-201 Second-Year German I**

4 credits, Not Offered Every Year  
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. First of a three-term second year course. Prerequisites: GER-103.

**GER-202 Second-Year German II**

4 credits, Not Offered Every Year  
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. Second of a three-term second year course. Prerequisites: GER-201.

**GER-203 Second-Year German III**

4 credits, Spring  
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. Third of a three-term second year course. Prerequisites: GER-202.

**GIS****Geographic Information Systems****GIS-101 Principles of Geospatial Technology**

2 credits, Fall/Spring  
This course serves as an overview of the concepts and principles of geospatial technology using lab activities to explore maps, geospatial data, and geospatial software. Major themes include: maps and cartography, geodesy, geographic information systems, spatial data privacy, global navigation satellite systems, remote sensing/image interpretation, terrain analysis, web maps, and the geospatial industry.

**GIS-201 Introduction to Geographic Information Systems**

3 credits, Summer/Fall  
This course explores fundamental concepts of geographic information systems (GIS) utilizing hands-on application through a variety of laboratory exercises with industry-standard ArcGIS software. The class explores basic map principles, cartographic design, geodesy, and geospatial data manipulation while exploring ArcGIS to create, display, query, relate, classify, and analyze spatial data to create maps and answer geographic questions.

**GIS-202 Intermediate Geographic Information Systems**

3 credits, Winter

This class follows the introductory course as a continuation of desktop Geographic Information Systems (GIS) principles using the ArcGIS software platform. Topics explored include working with geodatabases (feature datasets, feature classes, subtypes, domains, etc), topology, vector and raster analysis, creating and editing data, and process automation using ModelBuilder. Students also practice key GIS project management processes, workflows, and best practices through an analysis project. Prerequisites: GIS-201.

**GIS-205 Cartography and Map Making**

3 credits, Spring

Explores basic cartographic design principles and how to apply them to produce high quality maps using GIS software. Introduces cartographic terminology, principles, and map-making tools. Major themes include visual representation and communication; how to turn geographic data into effective maps for print and the web; how to critique maps; map design and elements; and color, fonts, labels, and symbols for maps. Prerequisites: GIS-201.

**GIS-232 Data Collection & Application**

2 credits, Spring

This course introduces data collection techniques and application of those techniques. This course explores different techniques to collect spatial and attribute data. The class focuses on GPS (Global Positioning System) data collection using a combination of recreational/mapping-grade GPS units and common mobile devices (with embedded GPS) used in industry. The class will emphasize the capabilities and strengths of each type of data collection equipment. Prerequisites: GIS-101.

**GIS-236 Introduction to Programming for GIS**

3 credits, Not Offered Every Term

An introduction to computer programming and Object Orientated Programming (OOP) with the Python language. Covers basic computer programming concepts including data types, loops, control structures, functions, classes, and program development. Use Python for problem solving by creating basic scripts all the way to more advanced object-oriented programs. Recommended: GIS-101.

**GIS-237 Advanced Programming for GIS**

3 credits, Not Offered Every Term

This course introduces Python programming in connection with Geographic Information Systems (GIS). It focuses on automating processes, procedures, programming with GIS data types, and building custom functions using ESRI's ArcGIS software platform. It also provides the opportunity to build custom Python script tools that can be used and shared among GIS users. Prerequisites: GIS-236.

**GIS-238 GIS Web Mapping and Services**

2 credits, Not Offered Every Term

This course presents the basic practices involved with GIS Web development. Gain an understanding of web GIS fundamentals. Introduces building GIS web maps, services, and applications. Focuses on developing and publishing on the web using the ESRI suite of web GIS technologies. Recommended: Familiarity with GIS software and applications.

**GIS-240 Geospatial Database Development and Management**

3 credits, Not Offered Every Term

Introduces the fundamentals of relational databases (non-geographic and geographic). Covers SQL query basics to retrieve, edit, insert, and manipulate data. Learn geo-relational database design concepts and theory. Work with open source Postgres/PostGIS and ESRI's geodatabase products. Identify and apply key differences in developing, querying, managing, and administering an enterprise geodatabase. Recommended: Familiarity with GIS software and applications.

**GIS-270 GIS Capstone**

3 credits, Spring

The Geographic Information Systems (GIS) Capstone course is the culmination of the Geographic Information Systems Technology (GIST) certificate program. Working with the instructor, students begin the course by researching and proposing a project. After developing a project plan and working through the analysis necessary, students will present their findings in an oral and written presentation. Additionally, scenario-based assignments will reinforce the project-based analysis process. Throughout the course, portfolio building strategies are explored with an emphasis on developing a professional portfolio demonstrating their work as preparation for entering the GIS profession.

**GIS-280 GIS/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative Work Experience. Provides students with on-the-job work experience in the field of geographic information systems. Variable Credit: 2-6 credits. Required: Student Petition. Prerequisites: GIS-201. Recommended: This class is intended for students that are completing their GIS Certificate at Clackamas Community College. Corequisites: CWE-281.

**GIS-286 Remote Sensing**

3 credits, Winter

This course is an introduction to the science of remote sensing. The course explores the techniques used to acquire, interpret, and process remotely sensed data. It provides a historical analysis of the technology, the interpretation of remotely sensed data, and the use of remote sensing data in GIS. Active and passive systems are explored as well as methodologies to transform and rectify remotely sensed raster data. Students explore applications of remote sensing using real-world examples and data. Prerequisites: GIS-201.

**GRN****Gerontology****GRN-165 Life Enrichment With Older Adults**

3 credits, Not Offered Every Term

Course focuses on creating meaningful activities for older adults in various settings, including long-term care and residential facilities. Focuses on creating person-centered programs that provide enriching activities for adults of all levels of cognitive ability. Includes federal guidelines for activities, as well as documentation. Course fulfills requirements for basic certification in the State of Oregon for Activity Professionals.

**GRN-179 Careers in Gerontology**

1 credit, Fall

This course provides students an introduction to the multidisciplinary field of gerontology. Focus will be on the varied areas students can utilize a gerontology education including healthcare, housing, fitness, community development, and advocacy.

**GRN-181 Issues in Aging**

3 credits, Fall

Provides an introduction to gerontology including the history of aging and current issues. Covers: myths, stereotypes, economic and political aspects, demographics and service availability for aging populations.

**GRN-182 Aging and the Body**

3 credits, Winter

Focuses on how aging affects physical health and well-being; impact on body systems, illness, disability, longevity research, wellness and health promotion. For students interested in working with the elderly and those in the field.

**GRN-183 Death and Dying**

3 credits, Spring

Introduces effective interaction with those experiencing death or grief process. Includes: historical and cross cultural perspectives, funeral and death rites, grief across the lifespan, hospice and palliative care, ethical considerations and physician aid in dying.

**GRN-184 Aging & the Individual**

3 credits, Winter

This course explores the impact of aging on the individual as well as family members, caregivers, and professionals. Topics include: dementia, cognitive issues, stress, coping, life transitions, and intelligence. Course will also discuss the concept of successful aging from cross-cultural perspectives.

**GRN-280 Gerontology/CWE**

2-6 credits, Not Offered Every Term

Cooperative work experience. Acquaint gerontology students with the roles and related activities of organizations serving the elderly. This course provides an opportunity to apply theories and techniques learned in the classroom. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition. Prerequisite or Corequisite: HS-170. Corequisites: CWE-281.

**GRN-290 Special Topics in Gerontology**

1-3 credits, Not Offered Every Term

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of aging. This topic will be pulled from a comprehensive list of areas identified by gerontology and healthcare professionals as having importance for students pursuing work in the field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

**GS****General Science****GS-104 Earth System Science**

4 credits, Fall

A lab course designed to give an overview of the physical sciences by examining the relationship between physics, chemistry and geology in the natural world. Topics include plate tectonics, the Earth's structure, earthquakes/hazards, mineral chemistry, igneous rocks, and volcanoes/hazards. Recommended: MTH-065 or placement in MTH-095.

**GS-105 Earth System Science**

4 credits, Winter

A lab course examining the chemistry and geology of scientific dating techniques, sedimentary rocks, surface processes, fossils, energy resources and the physics and chemistry of energy resources and mass wasting. Recommended: MTH-065 or placement in MTH-095.

**GS-106 Earth System Science**

4 credits, Spring

A lab course examining the relationship between chemistry/physics/geology with regards to the hydrosphere and atmosphere. Topics include atmospheric processes, rivers and ground water, beach/ocean processes and climate change. Recommended: MTH-065 or placement in MTH-095.

**GS-107 Astronomy**

4 credits, Fall/Winter/Spring

A lab course including the history of astronomy, the Earth and moon, all planets in our solar system, along with asteroids, meteors and comets. Prerequisites: MTH-065 or MTH-098 with a C or better or placement in MTH-095. Prerequisites: WRD-090 or placement in WRD-098.

**HD****Human Development/  
Career Planning****HD-100 College Survival**

1 credit, Fall/Winter/Spring/Summer

Covers various topics supporting student success and retention. May be repeated for up to 6 credits.

**HD-102 Service Learning Experience**

1-6 credits, Fall/Winter/Spring/Summer

Provides students with a service learning experience in a community setting. Students complete 30-180 hours of volunteer work and participate in ongoing journaling as well as reflection exercises to connect volunteer work with an area of study. Variable Credit: 1-6 credits. 30 hours of service required for each 1 credit earned. May be repeated for up to 6 credits. Required: Student Petition.

**HD-121 College Success**

3 credits, Fall/Winter/Spring

Provides strategies for creating college success by understanding one's role in their learning and by gaining critical skills necessary to learn across contexts.

**HD-140 Career Exploration**

1-3 credits, Fall/Winter/Spring

Students use information about themselves (values, interests, personality and skills) and information about the world of work (careers and industries) to explore and make long term career decisions. Variable Credit: 1-3 credits.

**HD-144 Assertiveness**

1 credit, Not Offered Every Term

Students can use this course to develop assertiveness in their communication and interpersonal relationships. The course focuses on identifying and meeting personal needs, setting boundaries, and asserting oneself in career, social, and personal settings.

**HD-145 Stress Management**

1 credit, Not Offered Every Term

Identifies specific personal stressors and focuses on developing skills that enable students to deal more effectively with stress.

**HD-146 Values Clarification - The Talk You Walk**

1 credit, Not Offered Every Year

Helps students examine beliefs, attitudes, and values behind decisions and actions. The students will examine whether behavior matches their stated beliefs, evaluate the consequences of choices, and focus on clarifying a personal value system.

**HD-147 Decision Making**

1 credit, Fall/Winter/Spring/Summer

Develop and improve the personal process for making healthy, satisfying choices. The basics of decision making and processes for making personal, social, and work choices are included. Use this class for current decision needs.

**HD-153 Managing Conflict in Your Life**

1 credit, Not Offered Every Year

Introduction to managing conflict in a positive and efficient way. Students will examine personal beliefs about conflict and become familiar with techniques for effective problem solving.

**HD-154 Building Self-Confidence**

1 credit, Not Offered Every Term

This course is designed to address the elements forming and influencing self-confidence as well as practicing techniques on disarming your inner critic, dealing with fear, reflection of confidence on self-esteem, personal power, and building on personal accomplishments and assets.

**HD-156 Creative Goal Setting**

1 credit, Not Offered Every Term

Using a variety of art media, learn how to use the creative process to define, plan, and achieve personal or professional goals.

**HD-157 Procrastination & Time Management**

1 credit, Not Offered Every Term

Provides students the opportunity to study their procrastination habits and time management patterns. Course focuses on components of time organization, choices regarding procrastination, and methods to improve overall use of time.

**HD-158 Managing Change**

1 credit, Not Offered Every Term

Course is designed to provide skills to understand and effectively navigate change in each student's life and the lives of those around them.

**HD-161 Multicultural Awareness**

3 credits, Not Offered Every Term

Introduction to the skills and personal attributes college graduates need to live and work in a diverse world, and how these characteristics influence interpersonal relationships in everyday life. This course focuses on the identification and application of strategies to improve personal multicultural awareness.

**HD-202 Life Transitions**

3 credits, Fall/Winter/Spring

Examines process and stages of life transitions. Helps re-entry adults identify personal strengths and barriers related to success in education and employment. Offers opportunities to practice interpersonal skills. Provides information about CCC campus and community resources which can assist students in reaching their goals. Corequisites: HD-208.

**HD-208 Career & Life Planning**

3 credits, Fall/Winter/Spring

Helps re-entry adults identify interests, abilities, values, and transferable skills and apply this information to goal setting and career decisions. Students identify and explore options for training, education, and employment. Covers job search skills such as interviewing, resume writing, and developing a career portfolio. Each student develops an action plan identifying goals and next steps. Corequisites: HD-202.

**HD-209 Job Search Skills**

1-3 credits, Not Offered Every Term

Use a Job Search Plan to conduct labor market research, develop job search networking relationships, and to prepare and present applications, cover letters, resumes, interviews, and thank you notes. Variable Credit: 1-3 credits.

**HD-220 Leadership: Theory Into Practice**

2 credits, Fall

Introduces leadership skills and theories. Includes translating theory into practice. Students discuss how leadership practices are put to use in campus leadership roles. Required: Required for members of CCC's Associated Student Government or a Peer Assistant (that have not previously taken this course).

**HD-221 Leadership: Group Dynamics**

2 credits, Winter

Develops leadership skills with an emphasis on group dynamics. Addresses building common vision and goals, managing conflict, negotiation, and collaboration. Includes the role of follower and avoiding ineffective group dynamics. Required: Required for members of CCC's Associated Student Government or a Peer Assistant (that have not previously taken this course).

**HD-222 Leadership: Building Community**

2 credits, Spring

Strengthens leadership skills with an emphasis on building community. Addresses diversity issues, deliberation, building consensus, ethical leadership and followership, and influence. Includes the role of leaders in the planning, implementation and assessment of community service events. Required: Required for members of CCC's Associated Student Government or a Peer Assistant (that have not previously taken this course).

**HD-280 Human Development/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with career-related experience in the field of Human Development or Leadership. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**HDF*****Human Development/  
Family Services*****HDF-140 Contemporary American Families**

3 credits, Spring

This course focuses on the diversity of the American family today and a historical overview of changes in the family environment and structure. Topics will include internal/external factors that influence families such as parenting, culture, gender, divorce, remarriage, economics, and culture.

**HDF-225 Prenatal, Infant & Toddler Development**

3 credits, Fall

Explores the principles of child development, prenatal through three years of age. Emphasis will be placed on the physical, cognitive, and social-emotional development of young children.

**HDF-247 Preschool Child Development**

3 credits, Winter

This course focuses on principles of development in children three to six years, including physical, cognitive, social and emotional growth, observation and assessment. Explores major historical theories of child development and current research and practices. Prerequisites: HDF-225.

**HDF-260 Understanding Child Abuse and Neglect**

4 credits, Fall/Winter/Spring

In this course, students will receive an overview of child abuse and neglect. Students will examine the types and causes of abuse, abused children, abusive parents, treatment, education and prevention, and resources available to assist children and families. An emphasis is placed upon intervention and mandatory reporting, as well as investigation and legal issues. This course presents the protocols related to forensic interviewing of abused children. Students will also learn about signs and symptoms of abuse and how trauma impacts an individual's health across a lifetime.

**HE*****Health*****HE-101 NCSF Certified Personal Trainer Exam**

0 credits, Not Offered Every Term

Students will take the National Council on Strength and Fitness (NCSF) exam at Clackamas Community College to become certified as a Certified Personal Trainer. Students with a test score of 70% or better will receive their certification from the NCSF. Required: Student Petition. Recommended: HE-201.

**HE-103 NCSF Certified Sports Nutrition Exam**

0 credits, Not Offered Every Term

Students will take the National Council on Strength and Fitness (NCSF) exam at Clackamas Community College to become certified as a Certified Sports Nutritionist. Students with a test score of 70% or better will receive their certification from the NCSF. Required: Student Petition. Recommended: HE-223.

**HE-163 Body & Drugs I: Introduction to Abuse & Addiction**

3 credits, Fall/Winter/Spring/Summer

The first of a four-course sequence, this course examines the history of the use of addictive drugs, the definition of addiction, psychosocial and neurobiological causes of drug and behavioral addiction, addictive drug classifications, and the history of/introduction to addiction treatment, and access and utilize effective resources to improve and maintain mental and physical wellbeing.

**HE-164 Body & Drugs II: Alcohol**

3 credits, Not Offered Every Term

The second of a four-course offering. Covers beverage alcohol as a drug, the history of alcohol use/abuse, physiological and psychological effects of alcohol use on the user, and the impact of that use on those around the user and on society at large, access and utilize effective resources to improve and maintain mental and physical wellbeing. Prerequisites: HE-163.

**HE-201 Personal Training**

3 credits, Not Offered Every Term

Students will follow the curriculum for the National Council on Strength and Fitness (NCSF) Certified Personal Trainer certification. The course will guide students through the expectations, requirements, processes and knowledge to prepare to become a certified Personal Trainer through the NCSF. Through videos, lecture and self-study, students will be prepared to take the NCSF Certified Personal Training exam, which is offered through the NCSF and is not included in the course.

**HE-202 Introduction to Fitness Technology Careers**

1 credit, Not Offered Every Term

This course will explore the various careers in the Fitness Industry through lecture and guest speakers currently in the professional field. Students will gain insight to the requirements, expectations, salary range, education requirements, and any additional information related to specific careers.

**HE-204 Nutrition & Weight Control**

3 credits, Fall/Winter/Spring

Methods of maintaining or improving nutrition by considering diets and dieting, obesity, types of exercise, physical testing, cardio-vascular fitness and nutritional concepts.

**HE-205 Youth Addictions**

3 credits, Fall

This course surveys the nature and extent of youth addictions. Students will explore causes and consequences of youth addiction, as well as interventions for youth and their families.

**HE-207 Introduction to Plant Based Living**

3 credits, Fall, Winter, Spring

The course is designed to give students a basic understanding of a plant based diet/lifestyle and the benefits of this type of lifestyle. Students will learn about the physical benefits of a plant based diet, organic foods, current environmental impacts of the big agricultural companies, animal welfare, and workers' rights as well as the research that has been documented to support the information.

**HE-223 Sports Nutrition**

3 credits, Fall/Winter/Spring

Examination of nutrition as it relates to the demands of exercise and competitive sport. Emphasis on the relationship of diet and exercise to optimal health and performance. This course can lead to a certification as a sports nutritionist through the NCSF.

**HE-249 Mental Health**

3 credits, Fall/Winter/Spring

Designed for each student to understand and improve their personal mental health. Teaches theories of mental health as well as practical strategies for improving one's level of mental health. Analyzes factors that may impede optimal mental health, again with practical solutions for minimizing/avoiding such factors.

**HE-250 Personal Health**

3 credits, Fall/Winter/Spring/Summer

This course is designed to help students gain an overall understanding of information basic to the field of health, to help them critically evaluate health information, and to promote positive attitudes, values, and behaviors in regard to personal health.

**HE-252 First Aid/CPR/AED**

3 credits, Fall/Winter/Spring/Summer

Provides instruction on immediate and temporary care of injuries and sudden illness. Covers poisoning, control of bleeding, bandaging and CPR/AED/airway obstruction for adult, child and infant. Successful completion (A or B grade) of course leads to a Red Cross First Aid/CPR/AED certification.

**HE-261 Community CPR**

1 credit, Not Offered Every Term

Basic Plus CPR, AED and First Aid for Adults is designed to train students to recognize and respond to various medical emergencies including: first aid and bandaging, choking, and cardiac emergencies that require CPR or the use of an AED. Bloodborne pathogens are also covered. Passing this course entitles the student to Medic First Aid certification for Cardiopulmonary Resuscitation for Adults.

**HE-263 Body & Drugs III: Marijuana**

3 credits, Not Offered Every Term

The third of a four-course sequence. This course will examine marijuana in all of its forms as a drug and a medicine, as well as its non-drug uses. Explores current research about marijuana's physiological and psychological effects on the user, as well as its addictiveness. Reviews historical and current medical uses of marijuana and cannabinoids, including an overview of Oregon's Medical Marijuana Program. Reviews Oregon's new "recreational" use legislation. Prerequisites: HE-163.

**HE-264 Body & Drugs IV: Other Drugs, Other Addictions**

3 credits, Not Offered Every Term

The fourth of a four-course offering, this course examines other drugs/addictive behaviors beyond alcohol and marijuana. The class will select the drugs/addictive behaviors (one from each of the following categories: stimulants, depressants, hallucinogens, other drugs/addictions) that they wish to discuss. Students will learn the history and the physiological and psychological impact of the selected drugs. Gambling addiction is a mandatory topic, which is required for the CADC I State certification. Prerequisites: HE-163.

**HE-280 Health/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience and training related to the Physical Education field. Covers job problems and procedures, evaluation of students' job performance by qualified college staff and site supervision. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition. Corequisites: CWE-281.

**HOR*****Horticulture/  
Arboriculture/  
Landscape/Organic  
Farming***

Many horticulture classes will transfer as Lower Division Collegiate (LDC) credits to Oregon State University. For additional information contact April Chastain, Horticulture Department Advisor, 503-594-3055.

**HOR-111 Horticulture Practicum/Fall**

2 credits, Fall

Practical experience with seasonal horticulture activities in the areas of container nurseries, greenhouses, landscape management, arboriculture, and organic food production.

**HOR-112 Horticulture Career Exploration**

2 credits, Spring

This course is a survey of the various career options available to students in the horticulture industry, with emphasis on nursery and greenhouse production, retail nursery, organic fruit and vegetable production, and landscape maintenance/installation. Includes field trips to local businesses. Oregon State University transfer course.

**HOR-113 Organic Farming Practicum/Fall**

3 credits, Fall

Essential organic farming practices, including seasonal activities such as crop rotation, cover cropping, four-season production strategies, edible crop planting, pest management, and tool and equipment operations. Field trips to area farms included. Class lecture, field trips, and lab are essential components of this course. This format has been selected to create a hands-on experience for each student in seasonal crop production. Class includes a lab component.

**HOR-115 Horticulture Safety**

1 credit, Fall

Overview of safe practices in the horticulture workplace which will reduce the chance for accidents and injuries.



**HOR-120 Pesticide Laws & Safety**

1 credit, Spring

Plant protection methods for weed, insect or disease control. Laws and regulations related to safety, handling and storage of pesticides. Techniques for product selection, including chemical and non-chemical options, applicator safety and environmental protection included. Prepare and test for the Oregon Pesticide Laws & Safety exam.

**HOR-122 Greenhouse I**

3 credits, Fall

Environmental influences on plant growth, crop scheduling, greenhouse structures and equipment. Emphasis on foliage and flowering potted plant production.

**HOR-123 Landscape Maintenance**

3 credits, Fall

Principles and practices of sustainable landscape maintenance, plant growth and development, soil-water-fertilizer management, pruning, turf, pest control, diagnosis of problems in trees and shrubs, and maintenance scheduling. Class includes a lab component.

**HOR-124 Food Harvest**

3 credits, Fall

This course provides a basic knowledge of aspects of harvesting, handling, storing and marketing of produce from small-scale, organic operations. Topics include: food safety laws and practices, harvest and storage requirements for a variety of crops, factors that impact quality and storage ability, and post-harvest biology. Class includes a lab component.

**HOR-125 Food Production in the Willamette Valley**

3 credits, Not Offered Every Year

Exploration of historical, ethical, practical and scientific aspects of food production systems with a focus on the economic, social and environmental impacts of food and farming. Strengths and weakness of the agricultural system over time will be examined.

**HOR-126 Landscape Water Features**

1 credit, Not Offered Every Year

Methods used in building water features with emphasis placed on design, material selection, construction and maintenance considerations.

**HOR-127 Landscape Lighting**

1 credit, Not Offered Every Year

Methods used with lighting in the residential landscape, with emphasis placed on design, material selection, installation and maintenance considerations.

**HOR-128 Landscape Stones & Pavers**

1 credit, Not Offered Every Year

Methods used in building walls, patios and walkways out of stones and pavers, with an emphasis placed on design, material selection, construction and maintenance considerations.

**HOR-129 Landscape Decks & Fences**

1 credit, Not Offered Every Year

Methods used in building wood fences and decking with emphasis placed on design, material selection, construction and maintenance considerations.

**HOR-130 Plant Propagation Theory**

3 credits, Winter

Covers plant anatomy and reproduction techniques of plants from seed, cuttings, grafting, division, and micro-propagation. Offers an in-depth overview of propagation systems that may be selected.

**HOR-131 Tree & Shrub Pruning**

3 credits, Winter

Emphasis on dormant pruning of fruiting and ornamental plants. Pruning and training techniques for grapes, fruit trees, and both evergreen and deciduous ornamental trees and shrubs. Basic woody plant anatomy, growth and development. Class includes a lab component.

**HOR-133 Horticulture Practicum/Winter**

2 credits, Winter

Practical experience with seasonal (winter) horticulture activities in the areas of container nurseries, greenhouses, and landscape management. Prerequisites: HOR-111.

**HOR-135 Propagation of Edible Plants**

3 credits, Winter

Reproduce food plants using a variety of methods, including seed, cutting and grafting techniques. Instruction will focus on methods suitable for sustainable farm operations. Class includes a lab component.

**HOR-136 Organic Farming Practicum/Winter**

3 credits, Winter

Essential organic farming practices, including seasonal activities such as ground preparation, planning for crop production, and irrigation system design and management. Also covers farm business structures, financial management, recordkeeping, and marketing techniques. Field trips to area farms included. Class lecture, field trips, and lab are essential components of this course. This format has been selected to create a hands-on experience for each student in seasonal crop production. Class includes a lab component.

**HOR-140 Soils**

3 credits, Spring

Soil characteristics and management, including nutritional elements and the relationship between the soil and plant growth.

**HOR-141 Organic Farming Practicum/Spring**

4 credits, Spring

Essential organic farming practices, including seasonal activities such as production of transplants, direct seeding, weed control strategies, building raised beds in the field, equipment operations, and soil, water and fertilizer management. Also covers preparation of the finished crop for market, transportation, display and marketing. Field trips to area farms included. Class lecture, field trips, and lab are essential components of this course. This format has been selected to create a hands-on experience for each student in seasonal crop production. Class includes a lab component.

**HOR-142 Greenhouse II**

3 credits, Spring

Detailed study of environmental influences on individual crops, their requirements, scheduling, including annual, biennial, and perennial plant production. Prerequisites: HOR-122.

**HOR-143 Horticulture Practicum/Spring**

2 credits, Spring

Practical experience with seasonal (spring) horticulture activities in the areas of container nurseries, greenhouses, and landscape management. Prerequisites: HOR-133.

**HOR-145 Turf Installation & Maintenance**

2 credits, Spring

Installation and maintenance practices for turf grasses commonly used in landscapes. Emphasizes sustainable maintenance practices, installation, irrigation, pest identification and pest control. Class includes a lab component.

**HOR-146 Fruit & Berry Growing**

3 credits, Summer

Regionally appropriate fruit and berry production practices that are suitable for urban areas and small farms. Class will utilize the Home Orchard Society's demonstration orchard located on campus. Class includes a lab component.

**HOR-148 Farm Equipment**

3 credits, Spring

Identification and utilization of small-farm food crop production tools. Emphasis is on tools and techniques which result in high quality crops, efficient use of labor and capital resources, and protection of the natural environment. Class includes a lab component.

**HOR-211 Native Plant Identification**

1 credit, Summer

Identification and use of plants native to the Pacific Northwest and the use of plant keys.

**HOR-212 Flower Arranger's Garden/Fall**

2 credits, Fall

Learn to identify and use organic methods to grow fall season plants which are suitable for use as cut flowers and foliage. Includes basic floral design and visits to local cutting gardens. Ideal for garden designers, home gardeners, and growers of commercial cutting gardens. Class includes a lab component.

**HOR-213 Computer-Aided Landscape Design**

3 credits, Not Offered Every Year

Develop skills with Computer-aided design (CAD) software for creating landscape designs. Practice techniques utilized in common CAD programs used in the landscape industry. Prerequisites: HOR-229. Recommended: CS-120 or comparable computer skills.

**HOR-215 Herbaceous Perennials**

3 credits, Spring

The identification, propagation, selection and garden culture as well as individual attributes of herbaceous perennial plants, including the evolution of perennial garden design and current gardening styles. Class includes a lab component. Oregon State University transfer course.

**HOR-216 Integrated Pest Management**

3 credits, Winter

Learn the components of, and develop an Integrated Pest Management (IPM) plan for landscape, nursery, greenhouse or organic farming. The plan will incorporate pest detection, control practices and an evaluation of effectiveness.

**HOR-220 Plant Propagation/Fall**

3 credits, Fall

Proper techniques for reproducing plants from seeds, cuttings, and grafting. Emphasis on seasonal plant production. Class includes a lab component.

**HOR-222 Horticultural Computer Applications**

2 credits, Winter

Utilizes database, spreadsheet, word-processing, PowerPoint, social media and other computer programs for record keeping and management and marketing for horticulture businesses. Recommended: CS-120 or comparable computer skills.

**HOR-223 Applied Plant Science**

4 credits, Fall

An overview of the practical aspects of plant growth and development, classification systems, plant breeding and environmental factors that impact plant growth.

**HOR-224 Landscape Installation**

3 credits, Fall

Materials and practices in landscape installation, including plan reading, materials take-off, estimating, bidding, scheduling, grading, construction materials, and plant installation. Provides an overview of Oregon state landscape contracting and licensing requirements. Recommended: MTH-050.

**HOR-225 Arboriculture I**

3 credits, Fall

Management of trees in residential, commercial, and urban landscapes. Follows course materials prepared by the International Society of Arboriculture (ISA). Topics covered include tree anatomy, selection, installation, response to damage, soil characteristics, pruning techniques and diagnosis of pest problems. Prepares student for Arboriculture II.

**HOR-226 Plant Identification/Fall**

4 credits, Fall

Identification of deciduous trees, shrubs, and groundcovers, including their cultural requirements in the landscape, for fall plants. Oregon State University transfer course.

**HOR-227 Plant Identification/Winter**

4 credits, Winter

Identification of conifers and broadleaf evergreens, shrubs, and groundcovers, including their cultural requirements in the landscape, for winter plants.

**HOR-228 Plant Identification/Spring**

4 credits, Spring

Identification of flowering trees, shrubs, and groundcovers, including their cultural requirements in the landscape, for spring plants. Oregon State University transfer course.

**HOR-229 Introduction to Landscape Design**

3 credits, Winter

Introduction to landscape planning, including basic drafting skills, grading, drainage, and site planning.

**HOR-230 Equipment Operation & Maintenance**

2 credits, Winter

Selection, operation, and maintenance of power driven machines, such as mowers, rototillers, chain saws, edgers, sprayers, tractors, and related equipment for nursery and landscape applications. Class includes a lab component.

**HOR-231 Irrigation Design**

3 credits, Winter

Principles of irrigation system design for various situations, including underground, above-ground, residential, commercial, and urban farm systems.

**HOR-232 Commercial Floral Design**

3 credits, Not Offered Every Year

This course covers design techniques used by florists to create arrangements, corsages, and bouquets using fresh flowers. Cut flower conditioning and handling, pricing and sales strategies will also be covered. Class includes a lab component.

**HOR-234 Intermediate Landscape Design**

3 credits, Not Offered Every Year  
Further skill development in drawing, site analysis, and design, including two, and three dimensional design concepts. Graphic exercises and model making skills will be included as well as the study of creative and practical solutions for various site and program requirements of commercial and residential landscape sites. Prerequisites: HOR-229.

**HOR-235 Weed Identification**

2 credits, Fall  
Identification and life cycles of weeds commonly found in landscapes, nurseries, and farms.

**HOR-236 Insect Identification**

2 credits, Fall  
Develop skills to identify common insects which are important in greenhouse/nursery production, landscapes and food production.

**HOR-237 Disease Identification**

2 credits, Winter  
Identification of ornamental plant diseases which occur in greenhouses, landscapes, nurseries, and farms.

**HOR-239 Tree Climber Training**

1 credit, Winter  
The safe use of rope and saddle tree climbing procedures will be covered through lecture, discussion, and field practice. For beginner to moderately experienced climbers. May be repeated for up to 3 credits.

**HOR-240 Irrigation Practices**

3 credits, Spring  
Materials, equipment, and methods used to install and repair irrigation systems in landscape areas. Recommended: HOR-231.

**HOR-241 Nursery Management**

3 credits, Not Offered Every Year  
Essentials of nursery practices, including containers and field growing practices, crop scheduling, management, and marketing.

**HOR-242 Plant Propagation/Spring**

3 credits, Not Offered Every Year  
Proper techniques for reproducing plants from cuttings, division, micropropagation and budding. Emphasis on seasonal plant production. Class includes a lab component.

**HOR-244 Environmental Landscape Design**

3 credits, Not Offered Every Year  
Overview of landscape design features that will benefit the natural environment, provide habitat for wildlife and require minimal inputs of energy, water and other materials. Includes basic design concepts, terminology and techniques, as well as ideas for marketing of sustainable designs. Class includes a lab component.

**HOR-246 Organic Farming and Gardening**

2 credits, Spring  
Overview of the fundamental principles and practices of organic fruit and vegetable production in the Pacific Northwest. Class includes a lab component. Oregon State University transfer course.

**HOR-248 Flower Arranger's Garden/Spring**

2 credits, Spring  
Learn to identify and use organic methods to grow spring season plants which are suitable for use as cut flowers and foliage. Includes basic floral design, garden planting and visits to local cutting gardens. Ideal for garden designers, home gardeners, and growers of commercial cutting gardens. Class includes a lab component.

**HOR-250 Herb Growing and Gardening**

1 credit, Spring  
Study of herb plant propagation and garden use. Identification of herbs, parts of the plant, garden culture, planning, site requirements and care of plants are covered.

**HOR-251 Herbal Products**

1 credit, Winter  
Instruction in making herbal teas, skin lotion, tincture, infused oil, vinegar, spritzers and herbal mixes. Instruction includes the use of specific ingredients, methods for effective usage and storage, and their importance.

**HOR-252 Kitchen Herbs**

1 credit, Fall  
Instruction will focus on how to use common herbs and spices in a variety of edible forms.

**HOR-260 Arboriculture II**

3 credits, Winter  
Evaluation, assessment and management of trees in the urban environment. Covers monetary and ecosystem values for trees, property development considerations, tree appraisals, tree inventories, risk assessments, and crew management. Together with Arboriculture I, this class will prepare students for passing the ISA Certified Arborist exam. Prerequisites: HOR-225.

**HOR-261 Tree Diagnostics**

2 credits, Spring  
Theory and practice in diagnosing specific biotic and abiotic causes of poor tree health. Includes identification of symptoms, use of monitoring tools and effective customer communications. Prepare and test for the Oregon Department of Agriculture Ornamental and Turf Insecticide/Fungicide exam. Class includes a lab component. Prerequisites: HOR-216, HOR-225, HOR-236, and HOR-237. Corequisites: HOR-120.

**HOR-262 Treework Practicum I**

2 credits, Fall  
Experience with the implementation of basic requirements, equipment and techniques employed by arborists who work aloft. Covers personal protective equipment, safe operation, and common cutting techniques in accordance with current industry standards. Students operate chainsaws in a variety of field exercises, and will gain exposure to other pieces of industry equipment, such as chipper, truck and trailer, and aerial lift. Students will participate as members of a crew, gaining introductory experience in tree pruning, rigging, hardware installation, electrical hazard awareness, aerial rescue, ground work, and work site management. Prerequisites: HOR-115, HOR-131, and HOR-239.

**HOR-263 Plant Health Care Practicum**

2 credits, Spring

Experience with the implementation of basic requirements and techniques employed by Plant Health Care Technicians who work on tree crews. Covers personal protective equipment, safe operation, routine maintenance and common techniques in accordance with current industry standards. Students will perform ground related activities, gaining experience in spray techniques, chipper operation, driving truck with chipper, interpretation of water audits, hazard tree identification, evaluation of key plants in the landscape, fertilization, customer education/communication and work site management. Class is a lab. Prerequisites: HOR-115, HOR-131, HOR-216, HOR-236, and HOR-237. Corequisites: HOR-120.

**HOR-264 Treework Practicum II (Aerial)**

2 credits, Fall

Experience with the implementation of intermediate requirements, using equipment and techniques employed by arborists who work aloft. Reinforces personal protective equipment, safe operation, and common cutting techniques in accordance with current industry standards. Students operate chainsaws in a variety of field exercises, and will gain exposure to other pieces of industry equipment, such as chipper, truck and trailer, and aerial lift. Students will participate as members of a crew, gaining additional experience in tree pruning, rigging, hardware installation, electrical hazard awareness, aerial rescue, ground work, and work site management. Prerequisites: HOR-262.

**HOR-280 Horticulture/CWE**

3 credits, Fall/Winter/Spring/Summer

On-the-job experience in the student's major course of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: Student Petition. Required: Students are expected to work a minimum of 90 job site hours. Corequisites: CWE-281.

**HOR-281 Horticulture/CWE**

6 credits, Fall/Winter/Spring/Summer

On-the-job experience in the student's major course of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 12 credits. Required: Student Petition. Required: Students are expected to work a minimum of 180 job site hours. Corequisites: CWE-281.

**HOR-282 Horticulture/CWE**

3 credits, Fall/Winter/Spring/Summer

On-the-job experience in the student's major course of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: Student Petition. Required: Students are expected to work a minimum of 90 job site hours. Corequisites: CWE-281.

**HOR-284 Organic Farming - Campus Farm/CWE**

3 credits, Summer

Experiential learning of organic farming techniques, while working on the Campus Farm. Students learn ecological and sustainable practices, principles and management strategies, and will participate in marketing the produce. Students are allowed to enroll after completing nine credits of Organic Farming courses. Class includes a lab component. Required: Student Petition. Required: Students are expected to work a minimum of 108 job site hours. Corequisites: CWE-281.

**HOR-285 Organic Farming/CWE**

3 credits, Fall/Winter/Spring/Summer

On-the-job experience working with an agricultural business/farm. Students are allowed to enroll in CWE after completing nine credits of Organic Farming courses. May be repeated for up to 6 credits. Required: Student Petition. Required: Students are expected to work a minimum of 90 job site hours. Corequisites: CWE-281.

**HOR-290 Special Topics in Horticulture**

1-3 credits, Winter

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of horticulture, landscaping, arboriculture or organic farming. This topic will be pulled from a comprehensive list of areas identified by horticulture professionals as having importance for students pursuing work in the field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits. Required: Student Petition.

**HPE****Health & Fitness****HPE-295 Health & Fitness for Life**

3 credits, Fall/Winter/Spring

This course explores interaction of physical fitness and health. Meets three hours a week for personal fitness assessment and three hours of classroom sessions. Related topics include: nutrition, stress reduction, relaxation techniques, goal setting, and weight control. Recommended: A completed physical by a doctor.

**HPE-296 Health and Fitness for Criminal Justice**

3 credits, Winter

This course provides students the knowledge and understanding of the interacting influence of physical fitness and health in all dimensions of wellness. Explores understanding and managing the stressors experienced by law enforcement and corrections personnel. Students will be prepared to complete the Oregon Physical Abilities Test (ORPAT), required by Oregon law enforcement and corrections academies.

**HS****Human Services****HS-100 Introduction to Human Services**

3 credits, Fall/Spring

This course focuses on the interpersonal skills, personal values, attitudes and knowledge necessary to become an effective human services worker. Also covers the history of human service work in the US, and the current status of social service provision. Required: Required for Human Services Generalist degree.

**HS-103 Ethics for Human Service Workers**

2 credits, Summer/Winter

Explores the professional issues students will face when in a helping relationship. Introduces the professional codes of ethics associated with the helping professions. Addresses solving ethical dilemmas using professional guidelines. Topics include client rights, confidentiality, professional boundaries, legal issues in helping, competence, and cultural diversity.

**HS-104 Using Diagnostic Criteria in Addiction Treatment**

1 credit, Winter

This course will present an overview of The American Society of Addiction Medicine (ASAM) Criteria and the Diagnostic and Statistical Manual (DSM) criteria related to addiction and substance use. Students will gain familiarity with the use of the ASAM Criteria to enhance the use of multidimensional assessments to develop patient-centered service plans. Students will also gain knowledge about the use of the DSM Manual to guide diagnosis and treatment of Substance Use Disorders.

**HS-154 Community Resources**

3 credits, Winter

Explores local community social service resources. Focuses on local agencies and programs, including services provided, eligibility criteria, mission, and policies of these agencies. Includes instruction in identifying client needs, various referral processes, and historical, political and social trends.

**HS-156 Conducting Human Service Interviews**

3 credits, Winter/Spring

Provides the specific techniques required for entry-level interviewing in human service settings. Addresses issues raised in working with clients from diverse backgrounds.

**HS-170 Preparation for Field Experience in Human Services**

3 credits, Spring

This course prepares students to complete fieldwork in Human Services. Includes dynamics of the workplace, coping with work stress, supervision, ethics, and diversity. Covers setting learning objectives and creating successful field placements. Required: Student Petition. Prerequisites: HS-100 or HS-154.

**HS-211 Infectious Diseases and Harm Reduction**

1 credit, Summer/Winter

This course will explore the relationship between substance abuse and infectious diseases, and discuss methods for reducing transmission of these diseases. Diseases will include HIV/AIDS, tuberculosis, hepatitis, and sexually transmitted infections. This course will provide students with techniques for assisting clients with assessing risk, practicing harm reduction, and evaluating treatment options.

**HS-216 Group Counseling Skills**

3 credits, Winter/Spring

This course provides students with strategies and skills for group work with a variety of clients. Explores leadership styles and skills, group formation and stages, and the ethics of working with groups. Will address knowledge needed to develop, run, and evaluate groups for a variety of human service topics, including substance abuse. Theories of therapeutic group work will also be discussed. Prerequisites: HS-156 with a C or better.

**HS-232 Case Management**

3 credits, Spring

Introduces case management techniques used by corrections and human services professionals in one-on-one and group contacts with clients. Explores a variety of case management materials, with an emphasis placed upon objective case planning and monitoring. Prerequisite Or Corequisite: HS-156.

**HS-256 Advanced Interviewing Skills With Theory**

3 credits, Fall

This course is designed to help human service students further develop and deepen their skills and understanding of interviewing in the human service field. Course will build on skills learned in HS-156, incorporating the use of behavior change theories to guide the helping process. Prerequisites: HS-156 with a C or better.

**HS-280 Human Services Generalist I: CWE/Practicum**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other occupations. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition. Prerequisites: HS-170. Corequisites: CWE-281.

**HS-281 Human Services Generalist II: CWE/Practicum**

2-6 credits, Fall/Winter/Spring

Cooperative work experience level II. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other related occupations. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition. Prerequisites: HS-170. Corequisites: CWE-281.

**HS-282 Human Services Generalist III: CWE/Practicum**

2-6 credits, Fall/Winter/Spring

Cooperative work experience level III. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other related occupations. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition. Prerequisites: HS-170. Corequisites: CWE-281.

**HS-290 Special Topics in Human Services**

1-3 credits, Not Offered Every Year

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of human services. This topic will be pulled from a comprehensive list identified by human service professionals as having importance for students pursuing work in this field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

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**HST****History****HST-101 History of Western Civilization**

4 credits, Fall/Winter/Spring/Summer

Origins and development of Western Civilization with a primary focus on Europe from ancient times to ca. 1300. Recommended: WRD-090 or placement in WRD-098.

**HST-102 History of Western Civilization**

4 credits, Fall/Winter/Spring/Summer

Origins and development of Western Civilization with an emphasis on Europe from ca. 1300 to 1800. Recommended: WRD-090 or placement in WRD-098.

**HST-103 History of Western Civilization**

4 credits, Fall/Winter/Spring/Summer  
Development of Western Civilization with an emphasis on Europe from the 19th century to the present. Recommended: WRD-090 or placement in WRD-098.

**HST-130 Oddballs and Outcasts in Western Civilization**

4 credits, Not Offered Every Year  
Explores the topic of how oddballs and outcasts from ancient Greece to the present shaped western civilization and places them in the political, social, economic, intellectual and cultural frameworks of their time. Recommended: WRD-090 or placement in WRD-098.

**HST-131 History of Crime & Punishment in Western Civilization**

4 credits, Not Offered Every Year  
Explores the topics of crime and punishment in western civilization from ancient Greece to the present and relates them to the political, social, economic, intellectual and cultural trends of each time period. Recommended: WRD-090 or placement in WRD-098.

**HST-132 History of Language and the Written Word in Western Civilization**

4 credits, Not Offered Every Year  
Explores the topics of language and the written word in western civilization from ancient Greece to the present and relates them to the political, social, economic, intellectual, and cultural trends of each time period. Recommended: WRD-090 or placement in WRD-098.

**HST-136 History of Popular Culture, Entertainment & Sports in Western Civilization**

4 credits, Not Offered Every Year  
Explores the topics of popular culture, entertainment and sports in western civilization from ancient Greece to the present and relates them to the political, social, economic, intellectual and cultural trends of each time period. Recommended: WRD-090 or placement in WRD-098.

**HST-137 History of Science, Medicine, & Technology in Western Civilization**

4 credits, Not Offered Every Year  
Traces the major developments in western civilization in the fields of science, medicine and technology from ancient Greece to the present. Includes an examination of the biographies of prominent scientists, doctors and engineers. Recommended: WRD-090 or placement in WRD-098.

**HST-138 History of Love, Marriage and the Family In Western Civilization**

4 credits, Not Offered Every Year  
Examines the concept of love and the institutions of marriage and the family in western civilization from ancient Greece to the present. Includes a consideration of the ideas of prominent thinkers, artists and political leaders. Recommended: WRD-090 or placement in WRD-098.

**HST-201 History of the United States**

4 credits, Fall  
Covers the period in American history from first European contact to the Age of Jackson. Prerequisite or Corequisite: WRD-098 or placement in WR-121. Recommended: Sequence of HST-201, HST-202, and HST-203 is taken in order.

**HST-202 History of the United States**

4 credits, Winter  
Covers the period of United States history from the Age of Jackson to World War I. Recommended that sequence is taken in order. Prerequisite or Corequisite: WRD-098 or placement in WR-121. Recommended: Sequence of HST-201, HST-202, and HST-203 is taken in order.

**HST-203 History of the United States**

4 credits, Spring  
Covers the period of United States history since and including WWI. Prerequisite or Corequisite: WRD-098 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

**HST-280 History/CWE**

2-6 credits, Fall/Winter/Spring  
Cooperative work experience. Provides students with on-the-job work experience in the field of history. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**HUM****Humanities****HUM-160 Faith & Reason**

5 credits, Not Offered Every Term  
Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: WRD-090 or placement in WRD-098.

**HUM-235 Perspectives on Terrorism**

4 credits, Not Offered Every Term  
Examines multiple perspectives of terrorism and investigates their assumptions and beliefs. Perspectives will include historical and psychological approaches as well as those of other academic disciplines. Recommended: WRD-098 or placement in WR-121.

**HUM-237 Perspectives on Democracy and Dialogue**

4 credits, Not Offered Every Term  
This course gives students the opportunity to practice the fundamental keystone of democracy: dialogue. The course will explore the variety of American political thought and philosophies through conversations with others in the community, crossing the political spectrum as well as broaching the lines of urban/rural context, socio-economic class, racial and ethnic identity, sex-gender identification, sexuality, age, religious affiliation and non-affiliation, and spiritual practices. Recommended: WRD-098 or placement in WR-121.

**HUM-240 American Military Conflict: Wars of National Identity**

4 credits, Not Offered Every Term  
Examines America's wars of national identity, principally the American Revolution and the Civil War. Explores characteristics of such wars, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian. Recommended: WRD-098 or placement in WR-121.

**HUM-241 American Military Conflict: Global War**

4 credits, Not Offered Every Term  
Examines America as a global power in 20th Century conflicts--World Wars I and II, the Cold War and possible future global conflicts. Explores characteristics of global war, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian. Recommended: WRD-098 or placement in WR-121.

**HUM-242 American Military Conflict: Asymmetric Warfare**

4 credits, Not Offered Every Term  
Examines America's military experience in asymmetric conflicts from colonial times to the present. Explores characteristics of asymmetric war, variations over time and space, and impacts on American society and culture, both military and civilian. Recommended: WRD-098 or placement in WR-121.

**IMT****Industrial Maintenance Technology****IMT-104 Reading Schematics and Symbols**

2 credits, Not Offered Every Term  
A basic course of study that will develop the student's understanding of reading schematics and symbols through lectures and hands-on examples.

**IMT-108 Rigging and Lifting**

2 credits, Fall  
This course provides instruction in rigging and lifting techniques including usage and inspection of rigging equipment, developing lift plans, anchoring to concrete, and heavy machinery installation. Students will be expected to perform lifts independently and in groups. Prerequisites: MTH-050.

**IMT-110 Preventative Maintenance**

2 credits, Spring  
This Course will introduce students to the basics of preventative maintenance programs in an industrial environment. Students will learn about how maintenance departments are organized, how projects and tasks are defined and delegated. Topics will include Maintenance organization, work order systems, maintenance planning, Scheduling, Quality control, Controlling parts and materials costs. Prerequisites: MTH-050.

**IMT-120 Industrial Machinery I**

3 credits, Winter  
This course will introduce students to industrial machinery and power equipment with respect to industrial maintenance. Students will learn the fundamentals of electro-mechanical machinery repair, assembly and disassembly and how to work safely around mechanical equipment and power tools. Topics discussed will include hand and power tools, preventative maintenance, power transmission systems, fasteners and torque. Prerequisites: MTH-050.

**IMT-139 Principles of Troubleshooting I**

2 credits, Winter  
Emphasizes theories and practices useful in troubleshooting failures in electrical applications. Focuses on the overall philosophy and strategy of troubleshooting, drawing applications from residential and varied industrial situations. Includes laboratory projects. Recommended: EET-112 or EET-137 or MFG-130.

**IMT-215 Electromechanical Systems I**

2 credits, Fall  
This course emphasizes applied electromechanical principles. The theory and application of force, work, torque, energy power and force transformers are explored. Covers motion control systems, basic relay circuits and sensors, stepper and servo motors and power transmission systems. Introductory mechanics areas also covered, including simple machines and an introduction to static and dynamic forces. Prerequisite or Corequisite: EET-137 or MFG-130.

**IMT-220 Industrial Machinery II**

3 credits, Fall  
This second course in industrial machinery will focus on advanced concepts in machinery trouble shooting, repair and maintenance. Students will learn about the integration of mechanical, fluid power and electrical systems, their characteristics and repair. Additionally, mechanical concepts of laser shaft alignment, vibration analysis and thermal diagnosis will be covered. Other topics will include electromechanical systems, lock-out tag-out, advanced mechanical diagnosis, motors and motor controls. Prerequisites: IMT-120 and MFG-130.

**IMT-223 Instrumentation & Controls**

3 credits, Spring  
Introduction to control systems and instrumentation. Includes open and closed loop systems. Focuses on the use of switches, sensors, and relays to control processes. Prerequisites: EET-137 or MFG-130. Recommended: EET-141 or MFG-131.

**IMT-225 Electromechanical Systems II**

2 credits, Spring  
This course in renewable systems will provide in-depth understanding of the technology, economics and policies relevant to each type of energy source. Analysis techniques to evaluate renewable energy applications from a systems design and selection perspective will be presented. Topics include physical operating principles, theoretical vs. actual system output, energy storage, efficiency and cost analysis. Includes hands-on lab exercises. Prerequisites: IMT-215.

**IMT-239 Principles of Troubleshooting II**

2 credits, Fall  
Covers advanced applications of diagnosis, maintenance and repair of systems. Also includes preventative maintenance, applied statistical process control and RF power generation. Recommended: EET-139.

**J****Journalism****J-134 Photojournalism**

4 credits, Not Offered Every Term  
Introduces the student to photojournalism, emphasizing composition, lighting and creative ways to illustrate a news story through photography.

**J-211 Mass Media & Society**

4 credits, Fall/Winter/Spring  
This course takes students through a critical study of the production and consumption of mass media, including television, radio, books, film, news, advertising and the internet. Students also examine the economic and social organization of mass media, the growth of new media technologies, and the relationship between media and the public. Recommended: WRD-098 or placement in WR-121.

**J-215 College Newspaper: Writing & Photography**

3 credits, Fall/Winter/Spring  
Students work as writers, photographers and editors on The Clackamas Print, the college's student-run newspaper and its website. Students study and produce news stories and news photos. In doing so, they learn different writing styles, photography rules, ethical standards of news gathering and the rights of a free press in a democracy. May be repeated for up to 6 credits. Recommended: Placement in WR-121.

**J-216 Writing for Media**

4 credits, Not Offered Every Term  
Introduces students to the fundamentals of writing for various media including journalism, public relations and other communications-related fields. Topics include news gathering, interviewing and media law, with an emphasis on writing for the web, print, broadcast and social media. Recommended: WRD-098 or placement in WR-121.

**J-220 Pod, Broad and Social - Journalism Across Platforms**

4 credits, Not Offered Every Term  
Students will learn to produce and publish news stories for a variety of platforms, including podcasting, TV, YouTube and other media. Lab component included. Recommended: WRD-098 or placement in WR-121.

**J-221 Pod, Broad and Social - Intermediate Journalism Across Platforms**

4 credits, Not Offered Every Term  
Students will learn intermediate skills to produce and publish news stories for a variety of platforms, including podcasting, TV, YouTube and other media. Lab component included. Prerequisites: J-220 with a C or better. Recommended: WRD-098 or placement in WR-121.

**J-222 Pod, Broad and Social - Advanced Journalism Across Platforms**

4 credits, Not Offered Every Term  
Students will produce and publish advanced news stories for a variety of platforms, including podcasting, TV, YouTube and other media. Lab component included. Prerequisites: J-221 with a C or better. Recommended: WRD-098 or placement in WR-121.

**J-225 Intermediate College Newspaper: Writing & Photography**

3 credits, Fall/Winter/Spring  
Intermediate news writing and photo-journalism for publication in the student-run Clackamas Print and its online media. Generate original story ideas, publish photo essays and complete more complicated interviews on multiple projects in news, arts, sports and opinion writing. Apply media ethics to social, online and print media. May be repeated for up to 6 credits. Prerequisites: J-215. Recommended: Placement in WR-121.

**J-226 Introduction to College Newspaper: Design & Production**

4 credits, Fall/Winter/Spring  
Offers students interested in page design and news production basic skills to create the student newspaper, The Clackamas Print, including writing headlines, editing photography and using Adobe InDesign. May be repeated for up to 8 credits. Recommended: Placement in WR-121.

**J-227 Intermediate College Newspaper: Design & Production**

4 credits, Fall/Winter/Spring  
Offers students interested in page design and news production intermediate skills to create the student newspaper, The Clackamas Print, including writing headlines, editing photography and using Adobe InDesign. May be repeated for up to 8 credits. Prerequisites: J-226.

**J-228 Advanced College Newspaper: Design & Production**

4 credits, Fall/Winter/Spring  
Offers students interested in page design and news production advanced skills to create the student newspaper, The Clackamas Print, including writing headlines, editing photography and using Adobe InDesign. May be repeated for up to 8 credits. Prerequisites: J-227.

**J-235 Advanced College Newspaper: Writing & Photography**

3 credits, Fall/Winter/Spring  
Advanced news writing and photography for publication online, in social media and in the student-run newspaper, The Clackamas Print. Students apply Associated Press style, use journalism ethics and cover a variety of topics and events in words and photos to build their journalism portfolios. May be repeated for up to 6 credits. Prerequisites: J-225. Recommended: Placement in WR-121.

**J-280 Journalism/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides the student with on-the-job experience and training related to journalism. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**J-280A Public Relations/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides the student with on-the-job experience and training related to public relations. Variable Credit: 2-6 credits. Required: Student Petition.

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**LIB****Library****LIB-101 Introduction to Library Research**

1 credit, Fall/Winter/Spring/Summer  
Trains students in the use of a variety of print and electronic information resources, search tools, and information evaluation. Excellent preparation for term papers and other research assignments. Recommended: CS-090 or equivalent experience.

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**MA****Medical Assistant****MA-110 Medical Terminology**

4 credits, Fall/Winter/Spring/Summer  
This course provides the foundational principles required for understanding medical terms used to communicate effectively within the healthcare field. This includes word meaning and discerning the difference between look-alike and sound-alike words through correct spelling and pronunciation. Students will develop the ability to read and comprehend the content of medical records and reports. Through the review of body systems this course includes introductions to disease processes, basic anatomy and physiology and associated terminology. This course is required prerequisite for Medical Assistant and Clinical Laboratory Assistant students.



**MA-112 Medical Office Practices**

4 credits, Fall

Focuses on administrative skills performed by the Medical Assistant in the ambulatory care setting. The course examines medical law and ethics, bioethics, principles of confidentiality and medical office function. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-110, and WR-101 or WR-121. Corequisites: BI-120 and MA-145.

**MA-115 Phlebotomy for Medical Assistants**

1 credit, Spring

The focus of this course is to understand appropriate blood specimen procurement techniques using vacutainer, syringe, 'winged infusion'/butterfly with syringe and capillary puncture methods and associated safety techniques. Other specifics of the blood specimen testing requirements, such as collection into the correct evacuated tube (additive), specimen handling procedures, collections of newborn screen and collection documentation are also covered; while assuring a safe, confidential and professional environment for the patient, and as the phlebotomy technician. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115L, MA-119, MA-121, and MA-121L.

**MA-115L Phlebotomy for Medical Assistants Lab**

1 credit, Spring

The focus of this course is to demonstrate appropriate blood specimen procurement techniques using vacutainer, syringe, 'winged infusion'/butterfly with syringe and capillary puncture methods and associated safety techniques. Other specifics of the blood specimen testing requirements, such as collection into the correct evacuated tube (additive), specimen handling procedures, collections of newborn screen and collection documentation are also covered; while assuring a safe, confidential and professional environment for the patient, and as the phlebotomy technician. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115, MA-119, MA-121, and MA-121L.

**MA-116 Introduction to Medications**

4 credits, Winter

Introduces the medical assistant student to the foundational concepts and principles of pharmacology; including the classifications of common medications including: indications for use, desired effect, side effect, adverse effects, and patient education. Related pathophysiology will be discussed. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-120, MA-110, MA-112, and MA-145. Corequisites: MTH-054, MA-117, MA-117L, MA-118, and MA-118L.

**MA-117 Clinical Lab Procedures I**

1 credit, Winter

This theory course is designed to instill a basic understanding of common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of bloodborne disease transmission and scope of practice will be emphasized. First course in the Clinical Laboratory Procedures series. Required: Student Petition. Required: Student must be enrolled in a current Medical Assistant cohort. Prerequisites: BI-120, MA-112, and MA-145. Corequisites: MA-116, MA-117L, MA-118, MA-118L, and MTH-054.

**MA-117L Clinical Lab Procedures I Lab**

1 credit, Winter

This laboratory course is designed to instill a basic understanding of common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of bloodborne disease transmission and scope of practice will be emphasized. This is the first course in the Clinical Lab Procedures series. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-120, MA-112, and MA-145. Corequisites: MA-116, MA-117, MA-118, MA-118L, and MTH-054.

**MA-118 Examination Room Techniques**

5 credits, Winter

This course covers fundamental theories of clinical practice and cognitive competencies involved in safe, efficient and quality exam room patient care and provider support. Special emphasis will be placed on the principles and skills of medical and surgical asepsis, infection control and safety in all exam room practices; preventative procedures, common diagnostic testing and related pathology, use of currently accepted techniques for and equipment in medication administration (excluding IV administration), patient care and interaction, and accurate documentation. This course provides a basis for critical thinking skills in the ambulatory setting. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-101, BI-102, BI-120, BI-120L, BI-231, BI-232, BI-233, MA-110, MA-112, and MA-145. Corequisites: MA-116, MA-117, MA-117L, MA-118L, and MTH-054.

**MA-118L Examination Room Techniques Lab**  
1 credit, Winter

This course covers fundamental skills which focus on the clinical techniques and competencies (psychomotor & affective) involved in safe, efficient and quality exam room patient care and provider support. Special emphasis will be placed on the principles and skills of medical and surgical asepsis, infection control and safety in all exam room practices; preventative procedures, common diagnostic testing and related pathology, use of currently accepted techniques for and equipment in medication administration (excluding IV administration), patient care and interaction, and accurate documentation. This course provides a basis for critical thinking skills in the ambulatory setting. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-101, BI-102, BI-120, BI-120L, BI-231, BI-232, BI-233, MA-110, MA-112, and MA-145. Corequisites: MA-116, MA-117, MA-117L, MA-118, and MTH-054.

**MA-119 Medical Assistant Practicum**

9 credits, Spring

Under supervision within the ambulatory care setting, the student will apply both administrative and clinical knowledge and practices as attained within the Medical Assisting course curriculum. Required: Student Petition. Prerequisites: MA-116, MA-117, MA-117L, MA-118, and MA-118L. Corequisites: MA-115, MA-115L, MA-121, and MA-121L.

**MA-121 Clinical Lab Procedures II**

1 credit, Spring

Designed to instill a basic understanding of simple, common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of blood born disease transmission and scope of practice will be emphasized. Continuation of the Clinical Laboratory Procedures series. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115, MA-115L, MA-119, and MA-121L.

**MA-121L Clinical Lab Procedures II Lab**

1 credit, Spring

This lab course is designed to instill a basic understanding of common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of the disease. Laboratory safety, the prevention of bloodborne disease transmission and scope of practice will be emphasized. Continuation of the Clinical Laboratory Procedures series. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115, MA-115L, MA-119, and MA-121.

**MA-145 Insurance & Health Information Management**

5 credits, Fall

This course introduces medical assisting students to practical applications for billing medical insurance both manually and electronically. The course is designed to instruct the student in all phases of billing and insurance procedures and entry level Electronic Health Record software for the management of medical records. It also teaches Front Office finance skills including bookkeeping, banking and collections. The students are also introduced to basic ICD-10 Diagnosis and Procedural coding skills. This course is required for medical assistant students. This course does not meet the requirements for Insurance Coder certification. Required: Student Petition. Required: Medical Assistant students only. Prerequisites: MA-110 and WR-121. Prerequisite or Corequisite: BI-120, or BI-101 and BI-102, or BI-231 and BI-232 and BI-233. Corequisites: MA-112.

**MBC****Medical Billing and Coding****MBC-115 Insurance Billing and Reimbursement I**

4 credits, Fall

First course of a two part series. This course introduces the student to health insurance, insurance billing and reimbursement. Students will study the health insurance industry, legal and regulatory issues, and differences in reimbursement methods. The principles of medical billing will be covered, including proper claim form preparation. Required: Student Petition. Required: Medical Billing and Coding students only.

**MBC-116 Insurance Billing and Reimbursement II**

3 credits, Winter

This course will continue to discuss health insurance and insurance billing, with a focus on healthcare reimbursement. Students will practice the principles of accounts receivable management from claim submission and follow up to posting payments received. Students will apply payments to patient accounts and track claims for correct payment. Legal and regulatory issues as they pertain to healthcare reimbursement are reviewed as well as the differences in reimbursement methods. Required: Student Petition. Required: Medical Billing and Coding students only. Prerequisites: MBC-115 with a C or better.

**MBC-120 Introduction to Medical Coding**

3 credits, Fall

This course will explore the fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc. Students will investigate the fundamentals of Diagnostic and Procedural medical coding. Required: Student Petition. Required: Medical Billing and Coding students only.

**MBC-125 ICD-10 Coding I**

2 credits, Winter

This course will discuss fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc., and how to apply them. The student will be introduced to the basics of diagnostic medical coding related to the International Classification of Diseases, Revision 10-Clinical Modification (ICD-10- CM) Code Set. Required: Student Petition. Required: Medical Billing and Coding students only. Prerequisites: MBC-120 with a C or better. Corequisites: MBC-126.

**MBC-126 CPT/HCPCS Coding I**

4 credits, Winter

This course reviews fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc. The student will explore the basics of procedural medical coding related to the Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Code Sets. Required: Student Petition. Required: Medical Billing and Coding students only. Prerequisites: MBC-120 with a C or better. Corequisites: MBC-125.

**MBC-135 Law and Ethics for Healthcare Professions**

3 credits, Fall

This course introduces legislation affecting healthcare, along with a review of issues such as professional liability, informed consent, privacy and security laws, electronic health records and workplace legalities. A variety of ethical issues in health care are explored, as well as an examination of future trends in health care. Required: Student Petition. Required: Medical Billing and Coding students only.

**MBC-140 Billing and Coding Exam Review**

1 credit, Spring

Practical application of Insurance billing and Medical coding skills learned throughout the program via examinations and practice scenarios. Required: Student Petition. Required: Medical Billing and Coding students only. Prerequisites: BA-131, MBC-115, MBC-116, MBC-120, MBC-125, MBC-126, MBC-135, and BI-120 with a C or better. Prerequisite Or Corequisite: COMM-218. Corequisites: MBC-225.

**MBC-225 ICD-10, CPT® and HCPCS Coding II**

5 credits, Spring

This course will demonstrate fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc. Students will explore the basics of diagnostic and procedural medical coding related to the International Classification of Diseases, Revision 10-Clinical Modification (ICD-10 CM), Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Code Sets. Required: Student Petition. Required: Medical Billing and Coding students only. Prerequisites: MBC-120, MBC-125, and MBC-126 with a C or better. Corequisites: MBC-140.

**MET****Manufacturing Engineering Technology**

For additional information, contact the Industrial Technology Department at 503-594-3318.

**MET-112 Introduction to Engineering and Technology Careers**

2 credits, Fall/Winter/Spring

This course is designed to provide an overview of five major engineering disciplines, their subsets and their respective career pathways. The course will also introduce students to the economic, environmental, social, political, ethical, as well as the health and safety realities of the engineering work environment. This course is intended to guide students in making appropriate career choices by exploring the following topics: engineering job demands, earning potential, marketability, licensure, and continuing education requirements.

**MET-150 Principles of Engineering - Project Lead The Way**

6 credits, Not Offered Every Term

Introduces students to the fields of engineering and engineering technology. Explores various engineering systems and processes and how math, science and technology are used in the engineering problem solving process. Includes concerns about social and political consequences of technological change. This course is part of the national Project Lead the Way curriculum.

**MET-170 Introduction to Manufacturing Processes**

3 credits, Spring

This is a survey course to introduce students to the fundamental processes that are used to manufacture everyday products. Includes machining, casting, forming, welding, molding, composites and microelectronics fabrication.

**MFG****Manufacturing Technology****MFG-102 Makerspace: An Introduction to Digital Manufacturing**

1 credit, Not Offered Every Term

This course introduces students to aspects of digital design and manufacturing through the use of sophisticated modeling software; 3-D printing, laser cutting and scanning; and CNC machining. Students will complete a series of hands-on projects that require imagination and determination while learning solid workmanship principles.

**MFG-103 Machining for Fabrication & Maintenance**

3 credits, Fall/Spring

This course is an introduction to metal working for welders, fabricators, maintenance personnel and others who need to understand simple machining principles. Students will be introduced to precision measurement with calipers and micrometers. Combination squares, protractor dividers and scribes will be used for semi-precision layout of workpieces in preparation for machining. The elementary use of the drill press, band saw, milling machine and lathe, as well as hand tools, will be practiced during hands-on labs. A discussion of thread systems will include nomenclature, measurement, tapping, chasing and repair. Prerequisites: MTH-050.

**MFG-104 Print Reading**

2 credits, Fall/Winter/Spring

Introduction to basic print reading. Students will use the principles of orthographic projection and current industry standards as they apply this knowledge to interpreting manufacturing prints.

**MFG-105 Dimensional Inspection**

2 credits, Winter

Covers precision measuring tools such as micrometers, dial indicators, gauge blocks, sine bars and other instruments used in quality control of manufactured products. Prerequisites: MFG-104.

**MFG-106 Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing**

1-3 credits, Spring

Introduces participants to the application of gauging and inspection using Geometric Dimensioning and Tolerancing (GDT). Students will identify inspection equipment and inspect GDT characteristics while experiencing their manufacturing implications. Variable Credit: 1-3 credits. Prerequisites: MFG-104.

**MFG-107 Industrial Safety & First Aid**

3 credits, Fall/Winter/Spring/Summer

This course is designed to provide the student with a basic understanding of safety hazards and first aid in the workplace. Includes eye safety, grinding wheel hazards, electrical/chemical hazards, slips, falls and back injuries. Instruction in first aid, AED and CPR and OSHA 10.

**MFG-109 Computer Literacy for Technicians**

3 credits, Fall/Winter/Spring

Presents the uses of computers in business and industry. Subjects covered include computer platforms, basic hardware, data communication and operating systems. Reviews & uses word processing, spreadsheet and database software for the PC.

**MFG-110 Manufacturing Special Projects**

1-9 credits, Fall/Winter/Spring

Allows students a great deal of latitude in project selection, design & production utilizing manual machine tools, CNC machine tools, CAD/CAM and electrical discharge machines. A solid understanding of all basic machine tools is expected. Variable Credit: 1-9 credits. May be repeated for up to 9 credits. Required: Student Petition.

**MFG-111 Machine Tool Fundamentals I**

3-9 credits, Fall/Winter/Spring/Summer

This course is an introduction to machine tool operation, precision measurement and engineering drawings. It also covers machine tool operations including drill presses, lathes and milling machines. The course includes internal and external threading. Variable Credit: 3-9 credits. May be repeated for up to 9 credits. Recommended: MFG-104, MFG-107, and MTH-050.

**MFG-112 Machine Tool Fundamentals II**

3-9 credits, Fall/Winter/Spring

This course is a continuation of machine tool operations. Covers set-up and operation of the vertical milling machine and boring techniques on the lathe. Includes surface grinding and selection of abrasive grinding wheels. Variable Credit: 3-9 credits. May be repeated for up to 9 credits. Prerequisites: 6 credits of MFG-111.

**MFG-113 Machine Tool Fundamentals III**

3-9 credits, Fall/Winter/Spring

Topics include offset boring heads, rotary tables, indexing devices, and taper attachments. Also covers applied technical math, inspection techniques, optical comparators, coordinate measuring machines, and cylindrical grinding. Variable Credit: 3-9 credits. May be repeated for up to 9 credits. Prerequisites: 6 credits of MFG-112. Recommended: MFG-111 and MFG-112.

**MFG-130 Basic Electricity I**

3 credits, Fall

Explores fundamentals of AC and DC electricity. Includes: atomic structure, direct current, alternating current, Ohm's law, series, parallel, and combination circuits, DC circuit theorems, production of DC voltages, magnetic principles, transformers, motors and generators.

**MFG-131 Basic Electricity II**

3 credits, Winter

Covers application of several theories learned in previous term. Additional topics will include: motors, controls, alignment, pulleys and gears, troubleshooting theory, power distribution and lighting, electrical wiring and schematics. Recommended: MFG-130 and MTH-050.

**MFG-132 Basic Electricity III**

3 credits, Spring

This course offers continued study in the control of industrial electric motors. Concepts in the application of relays, motor starters, switches and overload protection are explored from both a practical and theoretical viewpoint. Wiring techniques and electrical devices for residential, commercial and industrial facilities are presented along with hands-on activities. Additional topics include: electrical conductors, installation materials, and the scope of work performed by licensed electricians. Recommended: MFG-130 and MFG-131.

**MFG-140 Principles of Fluid Power**

3 credits, Winter

Course provides students with instruction in the use of hydraulics and pneumatics in industry, covering the fundamentals of hydraulics, basic components (valves, cylinders, pumps, motors, piping, fluid, fluid conditions, and accessories). Recommended: MTH-050.

**MFG-200 Introduction to CNC**

1 credit, Not Offered Every Term

Short course to prepare students to be entry-level CNC machine operators. Covers fundamentals of operation, setup principles and G & M code programming. Students will use hands-on activities on industrial milling & turning centers. Recommended for individuals with limited knowledge of CNC machining. Recommended: MFG-111.

**MFG-201 CNC I: Set-Up and Operation**

4 credits, Fall

A hands-on class will teach students how to set-up and operate Computer Numerical Control (CNC) milling and turning centers. Includes an introduction to G&M-code programming. Designed for persons with little or no previous experience. Prerequisites: 6 credits of MFG-111. Recommended: MFG-109 and MTH-080.

**MFG-202 CNC II: Programming & Operation**

4 credits, Summer/Winter

This course emphasizes the writing of G&M machine codes. Students will learn advanced programming and operations of CNC milling centers and basic programming, set-up, and operation of CNC turning centers. Prerequisites: MFG-201.

**MFG-203 CNC III: Applied Programming & Operation**

3 credits, Fall/Spring

Students work individually or in small groups to design, program, manufacture, and test advanced projects using: CNC mills, CNC lathes, Electrical Discharge Machines (EDM) and various software applications. Prerequisites: MFG-202. Recommended: MFG-201 or MFG-204.

**MFG-204 Computer-Aided Manufacturing I**

4 credits, Fall

This course is an introduction to computer-aided part creation and programming. Students will use CAD/CAM software to generate Numerical Control (NC) code to produce machined products. Model creation, process verification, code generation and CAD/CAM integration will be covered. Prerequisites: 6 credits of MFG-111.

**MFG-205 Computer-Aided Manufacturing II**

4 credits, Winter

This course focuses on hands-on CNC and manufacturing activities, including Mastercam solids, lathe, and multi-axis. Additional topics will include reverse engineering and post-processing. Class time will be devoted to demonstrations, and in-class projects. Prerequisites: MFG-204.

**MFG-206 Computer-Aided Manufacturing III**

3 credits, Spring

This course exposes students to advanced CAD/CAM processes, including mill/turn, four and five axis machining, tombstone and work holding concepts. Prerequisites: MFG-205.

**MFG-209 Programming & Automation for Manufacturing**

3 credits, Winter

A high-level computer literacy course for technologists. The focus of this course is on structured computer programming in the Visual Basic language and the application of programming industrial automation. Basic knowledge of the PC required. Recommended: MFG-109.

**MFG-210 CAM Special Projects**

1-4 credits, Not Offered Every Term

Allows students to integrate and improve CNC and CAD/CAM manufacturing skills. Students will be assigned a variety of hands-on projects based on their skill level and interest. Variable Credit: 1-4 credits. May be repeated for up to 4 credits. Required: Student Petition. Recommended: MFG-201 and MFG-204 (May be taken concurrently with MFG-204).

**MFG-211 Machine Tool Fundamentals IV**

3-6 credits, Fall/Winter/Spring

Concentrates on CNC setup and operation and on surface grinding. Students will develop and apply their machining skills while creating products in a team environment. Additional topics may include fixture design and cutting mechanics. Variable Credit: 3-6 credits. May be repeated for up to 6 credits. Prerequisites: 6 credits of MFG-113. Recommended: MFG-104, MFG-105 and MFG-113.

**MFG-219 Robotics**

3 credits, Not Offered Every Term

An introduction to robotics and industrial motion control. Students will be exposed to the operation, programming and applications of a typical FANUC, six-axis industrial robot. Hands-on activities will include manual tech programming, testing with simulation software and programming of advanced movements. Recommended: MFG-209 and MTH-050.

**MFG-221 Materials Science**

3 credits, Spring

Introduces metallurgy and material science. Extractive and physical metallurgy will be covered. Specific topics include heat treatment, materials analysis, the iron carbon phase diagram, composites, ceramics and industrial plastics. Recommended: MTH-050.

**MFG-271 Mastercam Mill I**

4 credits, Not Offered Every Term

Covers the creation and manipulation of two and three dimensional wire frame models as well as the creating, editing, and verification of 2-1/2 axis toolpaths. A fundamental understanding of the CAD/CAM process will be gained.

**MFG-272 Mastercam Mill II**

4 credits, Not Offered Every Term

Students construct three-dimensional geometric models using solids and surface modeling techniques. Students program models using advanced multi-axis programming techniques utilizing all aspects of roughing and finishing. Projects verified with solids toolpath verification. Recommended: MFG-271 or prior experience.

**MFG-273 Mastercam, Lathe, Mill, Multi-Axis**

4 credits, Spring

This course covers the fundamentals of Mastercam lathe and mill/turn tool paths. It also provides demonstrations and exercises on new and current programming techniques for advanced mill/turn machining centers. Additional topics will include multi-axis documentation and set-up sheets. Recommended: MFG-272 or prior experience.

**MFG-280 Manufacturing Technology/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in the manufacturing trades. Coordination of instruction will occur with industry and the manufacturing and cooperative work departments. Variable Credit: 1-6 credits. May be repeated for up to 6 credits. Required: Student Petition. Corequisites: CWE-281.

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**MTH****Mathematics****MTH-010 Fundamentals of Arithmetic**

4 credits, Fall/Winter/Spring/Summer

This first course in arithmetic reviews operations on whole numbers, basic fractions, decimals, measurement, and basic geometry.

**MTH-020 Fundamentals of Arithmetic II**

4 credits, Fall/Winter/Spring/Summer

This second course in arithmetic is a prerequisite for the three math pathways. It reviews mathematical foundations such as fractions, percents, geometry, and effective study skills. Prerequisites: MTH-010 with a C or better, or placement in MTH-020.

**MTH-050 Technical Mathematics I**

4 credits, Fall/Winter/Spring/Summer  
Designed for career-technical students. Topics focus on critical thinking, problem solving, and mathematical communication using applications arithmetic, measurement, geometry, and statistics and probability. Prerequisites: MTH-020 with a C or better, or placement in MTH-050 or higher.

**MTH-054 Medication Calculations for Medical Assistants**

4 credits, Winter  
This course is for students in the Medical Assistant program. Topics include problem solving, accuracy and precision of various systems of measurement, and calculating medication doses. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MTH-020 with a C or better, or placement in MTH-060.

**MTH-060 Algebra I**

4 credits, Fall/Winter/Spring/Summer  
Designed for review or for the beginner, this course is an introduction to topics in Algebra. Expressions, equations, inequalities, graphing, and functions are explored. Prerequisites: MTH-020 with a C or better, or placement in MTH-060.

**MTH-065 Algebra II**

4 credits, Fall/Winter/Spring/Summer  
The second term of topics in algebra using the rule-of-four approach: graphs, tables, words, and equations. This course emphasizes algebraic skills, as well as problem solving and graphical techniques with the use of a graphing utility. Prerequisites: MTH-060 with a C or better, or placement in MTH-065.

**MTH-080 Technical Mathematics II**

3 credits, Winter/Spring  
This course is the second in a sequence designed for career-technical students. The topics focus on critical thinking, problem solving, and mathematical communication using applications in arithmetic, algebra, geometry, and trigonometry. Prerequisites: MTH-050 with a C or better.

**MTH-082A Wastewater Math I**

1 credit, Fall  
Quantitative component to understanding wastewater operations. Simple unit conversions, fraction to decimal conversions and more complicated problem solving as applied to wastewater preliminary & primary treatment. Corequisites: WET-110.

**MTH-082B Waterworks Math I**

1 credit, Fall  
Problem solving for waterworks applications. Introduction to basic algebra and mathematical concepts, conversions, and calculations encountered in the waterworks industry. Corequisites: WET-111.

**MTH-082C Wastewater Math II**

1 credit, Winter  
Quantitative component to understanding analysis and operations of secondary wastewater systems. Flow rate, chemical dosage, treatment plant loading, treatment process efficiency, unit conversion and process control. Prerequisites: MTH-082A and MTH-082B. Corequisites: WET-120.

**MTH-082D Waterworks Math II**

1 credit, Winter  
Problem solving for waterworks applications. Introduction to contact-time (CT) calculations, how to determine chemical concentrations, the pounds formula, and basic hydraulics. Prerequisites: MTH-082A and MTH-082B. Corequisites: WET-121.

**MTH-082E Math for High Purity Water**

1 credit, Fall  
Basic math for high purity water concepts. Measurement accuracy, rounding rules & errors, significant figures, scientific notation, metric prefixes, simple statistics, average & standard deviation of a population. Corequisites: WET-125.

**MTH-095 Algebra III**

4 credits, Fall/Winter/Spring/Summer  
The third term of topics in algebra using the rule-of-four approach is designed to prepare students for transfer-level math courses. This course emphasizes problem-solving and graphical techniques with the use of a graphing utility. Prerequisites: MTH-065 with a C or better, or placement in MTH-095.

**MTH-098 College Math Foundations**

4 credits, Fall/Winter/Spring/Summer  
In our society, we see and hear about important topics and trends that involve numbers. In this class, participants work to understand what these numbers mean. Students will use percentages to make comparisons, interpret and construct graphs to describe phenomena, compare ways of describing quantities through unit conversions, explore the ways we use the idea of "average," and use rates and ratios to describe how things grow and change. Learning happens in small student groups, using technology, and through writing. The class is project-based, meaning that students complete projects to demonstrate what they've learned. Prerequisites: MTH-020 with a C or better, or placement in MTH-050, MTH-060, or MTH-098.

**MTH-105 Math in Society**

4 credits, Fall/Winter/Spring/Summer  
A transfer-level math course for non-science majors, focused on critical thinking, problem solving, and mathematical communication, and accomplished through the topics of Logical Reasoning and Problem Solving, Probability and Statistics, and Financial Math. Prerequisites: MTH-095 or MTH-098 with a C or better, or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

**MTH-111 College Algebra**

5 credits, Fall/Winter/Spring/Summer  
A transfer course designed for students preparing for trigonometry, statistics, or calculus. The focus is on the analysis of piecewise, polynomial, rational, exponential, logarithmic, power functions and their properties. These functions will be explored symbolically, numerically and graphically in real life applications and mathematical results will be analyzed and interpreted in the given context. The course will also include transformations, symmetry, composition, inverse functions, regression, the binomial theorem and an introduction to sequences and series. Prerequisites: MTH-095 with a C or better, or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

**MTH-112 Trigonometry and Pre-Calculus**

5 credits, Fall/Winter/Spring/Summer  
A transfer course designed to prepare students for calculus using an AMATYC standards-based approach utilizing the rule of four to analyze elementary functions and applications. Topics include right-triangle trigonometry, trigonometric functions developed from the unit circle, inverse trigonometric functions, using trigonometry to model and solve applications, trigonometric identities, polar functions, parametric functions, and vectors. Prerequisites: MTH-111 with a C or better, or placement in MTH-112. Recommended: WRD-098 or placement in WR-121.

**MTH-211 Fundamentals of Elementary Math I**

4 credits, Fall  
This course is the first in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Prerequisites: MTH-095 with a C or better, or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

**MTH-212 Fundamentals of Elementary Math II**

4 credits, Winter  
This course is the second in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Prerequisites: MTH-211 with a C or better. Recommended: WRD-098 or placement in WR-121.

**MTH-213 Fundamentals of Elementary Math III**

4 credits, Spring  
This course is the third in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Prerequisites: MTH-212 with a C or better. Recommended: WRD-098 or placement in WR-121.

**MTH-231 Elements of Discrete Mathematics**

4 credits, Winter  
Students will be introduced to discrete structures and techniques for computing. The course, which is the first in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Sets; Graphs and Trees; Functions: properties, recursive definitions, solving recurrences; Relations: properties, equivalence, partial order; Proof techniques: inductive proof; Counting techniques and discrete probability. Prerequisites: MTH-251.

**MTH-243 Statistics I**

4 credits, Fall/Winter/Spring/Summer  
This course introduces students to descriptive statistics, observational studies, experiments, elementary probability, random variables, and sampling distributions. Prerequisites: MTH-105, MTH-111, MTH-112, or MTH-251 with a C or better, or placement in MTH-112 or MTH-251. Recommended: WRD-098 or placement in WR-121.

**MTH-244 Statistics II**

4 credits, Not Offered Every Term  
The tools learned in Statistics II are used for hypothesis tests and confidence intervals for one and two populations, linear regression, inference about regression, and chi-square tests. Prerequisites: MTH-243 with a C or better. Recommended: WRD-098 or placement in WR-121.

**MTH-251 Calculus I**

5 credits, Fall/Winter/Spring/Summer  
Topics and applications of differentiation. This course is the first in a four-term sequence designed for students in science, engineering, or mathematics. It will focus on differential calculus. Prerequisites: MTH-112 with a C or better, or placement in MTH-251. Recommended: WRD-098 or placement in WR-121.

**MTH-252 Calculus II**

5 credits, Fall/Winter/Spring/Summer  
This course is the second in a four-term Calculus sequence designed for students in science, engineering and mathematics. It will focus on integral calculus. Prerequisites: MTH-251 with a C or better. Recommended: WRD-098 or placement in WR-121.

**MTH-253 Calculus III**

5 credits, Not Offered Every Term  
This course is the third in a four-term Calculus sequence. Topics include sequences and series (power, Taylor, MacLaurin), tests of convergence, Taylor polynomials, and multiple integrals using Cartesian, polar, cylindrical, and spherical coordinate systems. Prerequisites: MTH-252 with a C or better. Recommended: WRD-098 or placement in WR-121.

**MTH-254 Vector Calculus**

5 credits, Fall/Spring  
This course is an introduction to the study of vectors and analytic geometry in three-space, the calculus of vector-valued functions, and the calculus of several variables. Prerequisites: MTH-252 with a C or better.

**MTH-256 Differential Equations**

4 credits, Summer/Winter  
This course is an introduction to the study of first-order differential equations, first-order systems of differential equations, linear systems of differential equations, and applications of these topics. Prerequisites: MTH-252 with a C or better.

**MTH-261 Linear Algebra**

4 credits, Spring/Summer  
This course is an introduction to linear analysis of n-space: systems of linear equations, vectors, matrices, matrix operations, linear transformations, linear independence, span, bases, subspaces, determinants, eigenvalues, eigenvectors, inner products, diagonalization, and applications of these topics. Prerequisites: MTH-252 with a C or better. Recommended: WRD-098 or placement in WR-121.

**MTH-275 A Bridge to University Mathematics**

3 credits, Not Offered Every Term  
This is a bridge course designed to help students transition from computation-based mathematics to the more proof-based curriculum typical of junior and senior collegiate-level mathematics courses. Students will construct and validate proofs, explore the nature of mathematics, and navigate some of the systems and conventions used within the mathematics community. May be repeated for up to 6 credits. Prerequisites: MTH-251.

**MUP****Music Performance****MUP-100 Individual Lessons: Non-Music Majors**

1 credit, Fall/Winter/Spring/Summer  
Private lessons for beginners, non-music majors, and students who receive a low rating in MUP 171-191 auditions. Brass, woodwind, percussion, string and keyboard instruments, and voice. May be repeated for up to 6 credits. Required: Student Petition.

**MUP-102 Wind Ensemble**

2 credits, Fall/Winter/Spring  
For non-majors and music majors. Introduction and study of traditional and contemporary band literature. This is the first year of a two-year course of study that includes performance, study of common styles and practices of historically and culturally significant composers/arrangers, and study of historical issues related to the development and performance of band literature. Provides a thorough groundwork in the fundamental ideas, techniques, and practices of band music and ensemble performance. No audition required. May be repeated for up to 6 credits. Required: Completion of high school or high school performance level. Ability to read music and play a band instrument.

**MUP-104 Pep Band/Combo-Improv**

1 credit, Fall/Winter/Spring  
Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits. Recommended: MUP-105 or MUP-125.

**MUP-105 Jazz Ensemble**

2 credits, Fall/Winter/Spring  
For non-majors and music majors. Introduction and study of common "big-band" and small-group jazz styles. This is the first year of a two-year course of study that includes performance, improvisation, musical arranging and writing, study of common styles and practices of historically and culturally significant jazz artists, and study of historical issues related to the development and performance of jazz music. May be repeated for up to 6 credits. Recommended: MUP-102 and MUP-104.

**MUP-122 Chamber Choir**

2 credits, Fall/Winter/Spring  
Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. Enrollment by audition. May be repeated for up to 6 credits. Required: Enrollment by audition. Students wishing to register for chamber choir should have experience reading music OR have prior experience singing in choir. If not, the student will agree to take either MUS-117 Sight-reading, MUS-101, 102 or 103 Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I while registering for Chamber Choir. Recommended: A desire to sing in a large and fun ensemble. An interest in exploring the roots of American music.

**MUP-125 Vocal Jazz Ensemble: Mainstream**

2 credits, Fall/Winter/Spring  
Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques. Enrollment by audition. May be repeated for up to 6 credits. Required: Students wishing to register for Mainstream should have experience reading music OR have prior experience singing in choir. If not, the student will agree to take concurrently either MUS-117, Sightreading, MUS-101, 102 or 103, Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I.

**MUP-141 College Orchestra**

1 credit, Fall/Winter/Spring  
Performance and study of orchestral literature. College students may earn credit for playing in one of several approved orchestral groups. Minimum of one performance per term. May be repeated for up to 8 credits. Required: Student Petition.

**MUP-150 Contemporary Music Ensemble**

1 credit, Fall/Winter/Spring  
Studies the development and performance of original compositions through intensive musical collaboration and creation. May be repeated for up to 6 credits. Required: Pass proficiency audition.

**MUP-158 Chamber Ensemble**

1 credit, Fall/Winter/Spring  
Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. First of a two-part series.

**MUP-171 Individual Lessons: Piano**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-171J Individual Lessons: Jazz Piano**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability.

**MUP-171R Individual Lessons: Rock, Blues, Pop Piano**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability.

**MUP-172 Individual Lessons: Organ**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.





**MUP-185 Individual Lessons: Bassoon**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-186 Individual Lessons: Trumpet**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-186J Individual Lessons: Jazz Trumpet**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability.

**MUP-187 Individual Lessons: French Horn**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-188 Individual Lessons: Trombone**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-188J Individual Lessons: Jazz Trombone**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability.

**MUP-189 Individual Lessons: Euphonium**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-190 Individual Lessons: Tuba**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-191 Individual Lessons: Percussion**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability. Corequisites: MUS-189.

**MUP-191J Individual Lessons: Jazz Percussion**

2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition. Required: College-level performance ability.

**MUP-202 Wind Ensemble**

2 credits, Fall/Winter/Spring  
For non-majors and music majors. Introduction and study of traditional and contemporary band literature. This is the second year of a two-year course of study that includes performance, study of common styles and practices of historically and culturally significant composers/arrangers, and study of historical issues related to the development and performance of band literature. Provides a thorough groundwork in the fundamental ideas, techniques, and practices of band music and ensemble performance. No audition required. May be repeated for up to 6 credits. Required: Completion of high school or high school performance level. Ability to read music and play a band instrument. Prerequisites: MUP-102 (6 credits).

**MUP-204 Pep Band/Combo-Impro**

1 credit, Fall/Winter/Spring  
Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits. Prerequisites: MUP-104 (3 credits). Recommended: MUP-105 or MUP-125.

**MUP-205 Jazz Ensemble**

2 credits, Fall/Winter/Spring  
For non-majors and music majors. Introduction and study of common "big-band" and small-group jazz styles. This is the second year of a two-year course of study that includes performance, improvisation, musical arranging and writing, study of common styles and practices of historically and culturally significant jazz artists, and study of historical issues related to the development and performance of jazz music. May be repeated for up to 6 credits. Prerequisites: MUP-105 (6 credits).

**MUP-222 Chamber Choir**

2 credits, Fall/Winter/Spring  
Advanced vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. Enrollment by audition. May be repeated for up to 6 credits. Required: Students wishing to register for chamber choir should have experience reading music OR have prior experience singing in choir. If not, the student will agree to take concurrently either MUS-117, Sightreading, MUS-101, 102 or 103, Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I. Prerequisites: MUP-122 (6 credits).

**MUP-225 Vocal Jazz Ensemble: Mainstream**

2 credits, Fall/Winter/Spring  
Advanced performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques. Enrollment by audition. May be repeated for up to 6 credits. Required: Students wishing to register for Mainstream should have experience reading music OR have prior experience singing in choir. If not, the student will agree to concurrently take either MUS-117, Sightreading, MUS-101, 102 or 103, Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I. Prerequisites: MUP-125 (6 credits).

**MUP-241 College Orchestra**

1 credit, Fall/Winter/Spring  
Performance and study of orchestral literature. College students may earn credit for playing in one of several approved orchestral groups. Minimum of one performance per term. May be repeated for up to 8 credits. Required: Student Petition.

**MUP-258 Chamber Ensemble**

1 credit, Fall/Winter/Spring  
Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. Second of a two-part series. Prerequisites: MUP-158 (6 credits).

**MUP-271 Individual Lessons: Piano**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-171 (6 credits). Corequisites: MUS-189.

**MUP-271J Individual Lessons: Jazz Piano**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-171J (6 credits).

**MUP-271R Individual Lessons: Rock, Blues, Pop Piano**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-171R (6 credits).

**MUP-272 Individual Lessons: Organ**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-172 (6 credits). Corequisites: MUS-189.

**MUP-274 Individual Lessons: Voice**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-174 (6 credits). Corequisites: MUS-189.

**MUP-274J Individual Lessons: Jazz Voice**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-174J (6 credits).

**MUP-275 Individual Lessons: Violin**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-175 (6 credits). Corequisites: MUS-189.

**MUP-276 Individual Lessons: Viola**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-176 (6 credits). Corequisites: MUS-189.

**MUP-277 Individual Lessons: Cello**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-177 (6 credits). Corequisites: MUS-189.

**MUP-278 Individual Lessons: Bass**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-178 (6 credits). Corequisites: MUS-189.

**MUP-278J Individual Lessons: Jazz Bass**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-178J (6 credits).

**MUP-279 Individual Lessons: Harp**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-179 (6 credits). Corequisites: MUS-189.

**MUP-280 Individual Lessons: Guitar**

2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-180 (6 credits). Corequisites: MUS-189.



**MUP-291J Individual Lessons: Jazz Percussion**  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Sophomore-level performance ability. Prerequisites: MUP-191J (6 credits).

## MUS

### Music

**MUS-090 Preparation for Music Theory**  
2 credits, Summer

This course familiarizes students with terminology and building blocks used in Music Theory. Students who have played in ensembles or sang in choirs, but have not had a formal music theory program before, will find that this course prepares them to succeed in the Music Theory sequence (MUS-111-113).

**MUS-101 Music Fundamentals**

3 credits, Fall/Winter/Spring  
Introduction to fundamentals of reading and writing music. Designed for non-majors or majors needing substantial preparation for Music Theory I.

**MUS-102 Music Fundamentals**

3 credits, Winter/Spring  
Continues an introduction to fundamentals of reading and writing music. Designed for non-majors or majors needing substantial preparation for Music Theory I. Prerequisites: MUS-101.

**MUS-103 Music Fundamentals**

3 credits, Spring  
Continuance of an introduction to fundamentals of reading and writing music. Designed for non-majors or majors needing substantial preparation for Music Theory I. Prerequisites: MUS-102.

**MUS-105 Music Appreciation**

3 credits, Fall/Winter/Spring  
For non-majors and music majors. Emphasis on engaging in the study of instrumental and vocal musical genres from the ancient period through the contemporary music of our time. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. Recommended: WRD-098 or placement in WR-121.

**MUS-106 Audio Recording At Home**

1 credit, Fall/Winter/Spring/Summer  
An overview of the basic tools and techniques used in audio recording at home. Depending on participant needs, topics may include signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing.

**MUS-107 Introduction to Audio Recording I**

3 credits, Fall/Winter/Spring/Summer  
Introduction to the basic techniques and tools used in audio recording. Areas of study include signal path, microphone applications, software, hardware, outboard gear, tracking, mixing, and editing.

**MUS-108 Introduction to Audio Recording II**

3 credits, Fall/Winter/Spring  
Exploration of techniques and tools used in audio recording. Analog, digital, and hard drive recording will be explored. Areas of study include multi-tracking, signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing. Software/hardware includes ProTools, ADAT, Mackie, etc. Prerequisites: MUS-107.

**MUS-109 Introduction to Audio Recording III**

3 credits, Fall/Winter/Spring  
Exploration of digital recording/editing software and production of CD project. Advanced exploration of techniques and tools used in audio recording. Areas of study include signal path, microphone applications, software, hardware, outboard gear, tracking, mixing, and editing. Analog, digital, and hard drive recording will be explored. Software/hardware includes ProTools, ADAT, Mackie, etc. Prerequisites: MUS-108.

**MUS-111 Music Theory I**

3 credits, Fall  
For non-majors and music majors. Presents an introduction to the diatonic and chromatic structure of tonal music from the common practice period through written exercises, listening, and analysis. This is the first term of a three-term sequence, which includes concepts of pitch and rhythm, intervals, keys, scales, triads, dominant seventh chord, and standard cadences. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Recommended: MTH-095 or placement in MTH-111; WRD-098 or placement in WR-121. Corequisites: First year music majors must take MUS-111 concurrently with MUS-111L, MUS-114, and MUS-127. This requirement does not affect non-music majors.

**MUS-111L Music Notation Software I**

1 credit, Fall  
Introduces students to Finale (music notation software) on Macintosh computers. Required: Required for first-year music majors.

**MUS-112 Music Theory I**

3 credits, Winter  
For non-majors and music majors. Presents functional harmony through written exercises, listening, and analysis. This is the second term of a three-term sequence, which includes voice leading, nonharmonic tones, three-voice and four-voice chorale writing, figured bass, and small melodic structures. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Required: First year music majors must take MUS-112 concurrently with MUS-112L, MUS-115, and MUS-128. This requirement does not affect non-music majors. Prerequisites: MUS-111.

**MUS-112L Music Notation Software I**

1 credit, Winter  
Continues an introduction to Finale (music notation software) on Macintosh computers. Required: Required for first-year music majors.

**MUS-113 Music Theory I**

3 credits, Spring

For non-majors and music majors. Presents the diatonic and chromatic structure of tonal music in theory from the common practice period through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence, which includes chord progressions, use of triad inversions, seventh chords, secondary harmony, tonicization, and modulation to closely related keys. Required: First year music majors must take MUS-113 concurrently with MUS-113L, MUS-116, and MUS-129. This requirement does not affect non-music majors. Prerequisites: MUS-112.

**MUS-113L Music Notation Software I**

1 credit, Spring

Continues an introduction to Finale (music notation software) on Macintosh computers. Required: Required for first-year music majors.

**MUS-114 Aural Skills I**

2 credits, Fall

First course in a year-long sequence. Diatonic sight singing in major keys using sol feg syllables and moveable “do.” Melodic dictation and aural recognition of intervals and triads. Required: Required for first-year music majors. Corequisites: MUS-111.

**MUS-115 Aural Skills I**

2 credits, Winter

Second of three courses in a year-long sequence. Diatonic sight singing in major keys using sol feg syllables and moveable “do.” Melodic dictation and aural recognition of intervals, triads, and 7th chords. Required: Required for first-year music majors. Prerequisites: MUS-114. Corequisites: MUS-112.

**MUS-116 Aural Skills I**

2 credits, Spring

Third of three courses in a year-long sequence. Diatonic sight singing in major keys using sol feg syllables and moveable “do.” Melodic dictation and aural recognition of intervals, triads, and 7th chords. Required: Required for first-year music majors. Prerequisites: MUS-115. Corequisites: MUS-113.

**MUS-117 Sightreading**

1 credit, Fall/Winter/Spring

Learning to read and sing music by sight. Students will spend time practicing sightsinging, starting with easy exercises and moving to more difficult exercises as the term progresses.

**MUS-127 Keyboard Skills I**

2 credits, Fall

Develops basic keyboard skills required for study of tonal harmony and various musical activities such as vocal and instrumental rehearsals, music education and composition. Required: Required for music majors. Recommended: Some experience in reading treble and bass clef, or C or better in one of the following courses: MUS-117, MUS-131, MUS-132, or MUS-133. Corequisites: MUS-111, MUS-111L, MUS-114.

**MUS-128 Keyboard Skills I**

2 credits, Winter

Develops basic keyboard skills required for study of tonal harmony and various musical activities such as vocal and instrumental rehearsals, music education and composition. Required: Required for music majors. Prerequisites: MUS-127. Corequisites: MUS-112, MUS-112L, and MUS-115.

**MUS-129 Keyboard Skills I**

2 credits, Spring

Develops basic keyboard skills required for study of tonal harmony and various musical activities such as vocal and instrumental rehearsals, music education and composition. Required: Required for music majors. Prerequisites: MUS-128. Corequisites: MUS-113, MUS-113L, and MUS-116.

**MUS-131 Group Piano: Piano for Pleasure**

1 credit, Fall

First of three courses in a year-long sequence. Beginning classroom piano instruction for non-music majors. Includes reading, theory, technical exercises, and the opportunity to share your music with others. Beginning to intermediate level.

**MUS-132 Group Piano: Piano for Pleasure**

1 credit, Winter

Second of three courses in a year-long sequence. Beginning classroom piano instruction for non-music majors. Includes reading, theory, technical exercises, and the opportunity to share your music with others. Beginning to intermediate level.

**MUS-133 Group Piano: Piano for Pleasure**

1 credit, Spring

Third of three courses in a year-long sequence. Beginning classroom piano instruction for non-music majors. Includes reading, theory, technical exercises, and the opportunity to share your music with others. Beginning to intermediate level.

**MUS-134 Group Voice: Anyone Can Sing**

1 credit, Fall

Basic vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received a low rating on MUP-174 audition.

**MUS-135 Group Voice: Anyone Can Sing**

1 credit, Winter

Vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received a low rating on MUP-174 audition.

**MUS-136 Group Voice: Anyone Can Sing**

1 credit, Spring

Vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received a low rating on MUP-174 audition.

**MUS-137 Group Guitar I: Guitar for Dummies**

1 credit, Fall/Winter/Spring

For beginning to intermediate players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide own instrument.

**MUS-138 Group Guitar II**

1 credit, Winter

For intermediate to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument. Prerequisites: MUS-137.

**MUS-140 Careers in Music**

3 credits, Winter

An overview of the music industry career opportunities. Studies include recording studio management/engineering, music merchandising, promotion, music contracting, agent/personal manager, live performing, teaching, technical support, record business, video and film production/editing, retailing, and instrument repair. Required: Required for the Music Technology certificate.

**MUS-141 Introduction to the Music Business**

3 credits, Fall

Explores business basics, songwriting, demos, agents, managers, copyrights, gig and concert promotion, publishing, licensing, and music business structures.

**MUS-142 Introduction to Electronic Music I: MIDI**

3 credits, Fall/Winter/Spring

Introduction to synthesis, MIDI sequencing, basic musical elements, and the basics of production. Learn how to make beats, songs, etc. Uses common production software/hardware.

**MUS-143 Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX**

3 credits, Fall/Winter/Spring

An introduction to digital audio in the MIDI environment. This course continues MIDI sequencing, and integrates audio into the MIDI environment with audio looping, and spotting sound effects. Uses common production software/hardware. Prerequisites: MUS-142.

**MUS-144 Introduction to Electronic Music III: Digital Audio**

3 credits, Fall/Winter/Spring

Exploration of digital music recording and editing, synthesis, sampling, and sequencing. Presents CD/audio file production techniques integrating digital audio with the MIDI sequence. Uses Pro Tools, and other common production software/hardware. Prerequisites: MUS-143.

**MUS-145 Introduction to Digital Sound, Video & Animation**

3 credits, Winter/Spring

An introduction to new media. Includes sound, video, animation, mp3, DVD, and compression technology.

**MUS-147 Music, Sound & Moviemaking**

1 credit, Fall/Winter/Spring

Presents the basic components of designing, shooting, recording audio, and post production of movies as well as the history and theory that has led to contemporary film production.

**MUS-148 Live Sound Engineering**

3 credits, Fall/Spring

Introduction to the basic techniques and tools used in live sound engineering and mixing. Areas of study include set up, signal path, microphone applications, hardware, and outboard gear.

**MUS-149 Advanced Pro Tools Editing Techniques**

1 credit, Not Offered Every Term

Additional advanced training in Pro Tools audio software techniques. The student will learn techniques in audio editing using warp audio, Beat Detective, and other plug-ins not covered in the MUS-107 through MUS-109 series. Prerequisites: MUS-107 or MUS-143 or equivalent.

**MUS-160 Songwriting I**

2 credits, Winter/Spring

Studies the techniques of a working songwriter, including use of form, lyrics, harmonic progressions and symbolism in the creative aspect of songwriting. Solo writing as well as the concept of collaboration are introduced. Participants will work individually and/or in small groups to record original songs. May be repeated for up to 4 credits.

Required: Working proficiency at playing an instrument such as piano, guitar, voice, or equivalent. Computer generated music is also acceptable.

**MUS-161 Songwriting II**

2 credits, Spring

Songwriting II is a continuation of MUS-160, Songwriting I. Further explores the elements of songwriting, focuses on creating a digital composition portfolio and public performance.

**MUS-170 Introduction to Scoring Music for Media**

2 credits, Spring

Introduction to the analysis, writing, and production of basic film, video, and/or video game music scores and spotting music cues. Prerequisites: MUS-102 or MUS-112 or MUS-143.P

**MUS-171 Sound Design**

2 credits, Winter

This course introduces students to the fundamentals of sound design through a series of practical, hands-on activities. Students will gain an understanding of the skills, tools, and concepts used in the creation and synchronization of sound effects in modern visual media. Through a thorough introduction to sound recording, editing and mixing, audio manipulation, and electronic synthesis, this course will provide students with the knowledge and skills to create unique sound effects using industry standard software like Pro Tools, Propellerhead's Reason, Ableton Live, Native Instrument's Reaktor, and other sound design-specific software.

**MUS-189 Performance & Repertoire**

1 credit, Fall/Winter/Spring

A performance forum required for all students studying a classical instrument or voice at the MUP 171-191 and MUP 271-291 levels. Through weekly performance and critique, each student will develop proper stage manners and prepare for the end of term performance jury, and will also study the work to be performed through academic research. Students will have an opportunity to work with a professional accompanist. May be repeated for up to 6 credits.

**MUS-205 Music Literature: History of Jazz**

4 credits, Not Offered Every Term

For non-majors and music majors. Emphasis on engaging in the study of Jazz music and surrounding cultural/historical issues. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. Recommended: WRD-098 or placement in WR-121.

**MUS-206 Music Literature: History of Rock**

4 credits, Fall/Winter/Spring

For non-majors and music majors. Emphasis on engaging in the study of Rock music and surrounding cultural/historical issues. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. An examination of Rock music as a contemporary social medium. Recommended: WRD-098 or placement in WR-121.

**MUS-207 Advanced Recording Techniques: Drums**

1 credit, Not Offered Every Term  
Advanced training for recording drum kits and various hand percussion instruments. Prerequisites: MUS-107.

**MUS-211 Music Theory II**

3 credits, Fall  
For non-majors and music majors. Continuation of the study of functional harmony through written exercises, compositions, listening, and analysis and introduction to polyphony. This is the first term of a three-term sequence, which includes late Renaissance polyphony, baroque counterpoint, and chromatic harmony. Prerequisites: MUS-113. Corequisites: MUS-214 and MUS-224.

**MUS-212 Music Theory II**

3 credits, Winter  
For non-majors and music majors. Continuation of the study of harmony and period styles through written exercises, compositions, listening, and analysis. This is the second term of a three-term sequence, which includes the classical style, extended, and chromatic harmony. Required: Ability to read music. Required for Music Majors. Prerequisites: MUS-211. Corequisites: MUS-215 and MUS-225.

**MUS-213 Music Theory II**

3 credits, Spring  
For non-majors and music majors. Continuation of the study of harmony, period styles after the 18th century through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence, which includes the 19th and 20th century idioms such as Romanticism, impressionism, post-Romanticism, and serialism. Prerequisites: MUS-212. Corequisites: MUS-216 and MUS-226.

**MUS-214 Keyboard Skills II**

2 credits, Fall  
Advanced keyboard applications of the materials of diatonic and chromatic music. Required: Required for second-year music majors. Prerequisites: MUS-129. Corequisites: MUS-211.

**MUS-215 Keyboard Skills II**

2 credits, Winter  
Second course in the sequential second year of advanced keyboard applications covering the materials of diatonic and chromatic music. Required: Required for second-year music majors. Prerequisites: MUS-214. Corequisites: MUS-212.

**MUS-216 Keyboard Skills II**

2 credits, Spring  
Third course in the sequential second year of advanced keyboard applications covering the materials of diatonic and chromatic music. Required: Required for second-year music majors. Prerequisites: MUS-215. Corequisites: MUS-213.

**MUS-218 MPT Seminar I**

1 credit, Fall  
First of a three-part series. For second year MPT students only. Seminar will cover writing, arranging, production, performance and music theory through experiential learning. Students will produce, write and arrange for each CWE/Songwriters concert and will produce the Annual MPT festival each spring. Required: Must be a 2nd year MPT student in good standing. Prerequisites: MUS-103, MUS-109, MUS-113L, and MUP-150.

**MUS-219 MPT Seminar II**

1 credit, Winter  
Second in a three-part series. For second year MPT students only. Seminar will cover writing, arranging, production, performance and music theory through experiential learning. Students will produce, write and arrange for each CWE/Songwriters concert and will produce the Annual MPT festival each spring. Prerequisites: MUS-218.

**MUS-220 MPT Seminar III**

1 credit, Spring  
Third in a three-part series. For second year MPT students only. Seminar will cover writing, arranging, production, performance and music theory through experiential learning. Students will produce, write and arrange for each CWE/Songwriters concert and will produce the Annual MPT festival each spring. Prerequisites: MUS-219.

**MUS-224 Aural Skills II**

2 credits, Fall  
First of three courses in a year-long sequence. Diatonic and chromatic sight singing with sol feg syllables and moveable "do." Four-part dictation including all chromatic devices studied in Theory II. Required: Required for second-year music majors. Prerequisites: MUS-116. Corequisites: MUS-211.

**MUS-225 Aural Skills II**

2 credits, Winter  
Second of three courses in a year-long sequence. Diatonic and chromatic sight singing with sol feg syllables and moveable "do." Four-part dictation including all chromatic devices studied in Theory II. Required: Required for second-year music majors. Prerequisites: MUS-224. Corequisites: MUS-212.

**MUS-226 Aural Skills II**

2 credits, Spring  
Third of three courses in a year-long sequence. Diatonic and chromatic sight singing with sol feg syllables and moveable "do." Four-part dictation including all chromatic devices studied in Theory II. Required: Required for second-year music majors. Prerequisites: MUS-225. Corequisites: MUS-213.

**MUS-230 Music and Media: Sex, Drugs, Rock & Roll**

4 credits, Fall/Winter/Spring  
Explores history and development of the pop music, pop culture and media industries in America.

**MUS-242 Music Creation with Ableton LIVE**

1 credit, Not Offered Every Term  
This course enables the student to use Ableton LIVE software to create music. Prerequisites: MUS-142.

**MUS-247 Sound for Media**

3 credits, Fall/Spring  
Introduction to sound as related to film making, animation, and video games. Students will have the opportunity to create and assemble sound for media into a finished product. Explores the basic components of commercial film/video, animation, and game production as they relate to sound. Recommended: Experience using a DAW (Digital Audio Workstation) or video editing software.



**MUS-280 Music/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of music. Variable Credit: 2-6 credits. Required: Student Petition. Prerequisites: MUS-107, MUS-140, and MUS-142. Corequisites: CWE-281.

**NRS****Nursing****NRS-110 Foundations of Nursing - Health Promotion**

5 credits, Fall

This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-health as well as patient health practices. To support self and patient health practices, students learn to access research evidence about healthy life-style patterns and risk factors for disease/illness, apply growth and development theory, interview patients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences. The clinical portion of the course includes practice with therapeutic communication skills and selected core nursing skills identified in the OCNE Core Nursing Skills document. Required: Acceptance into the CCC nursing program. Corequisites: NRS-110C and NRS-230.

**NRS-110C Foundations of Nursing - Health Promotion Clinical**

4 credits, Fall

This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-health as well as client health practices. To support self and client health practices, students learn to access research evidence about healthy life-style patterns and risk factors for disease/illness, apply growth and development theory, interview clients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Corequisites: NRS-110 and NRS-230.

**NRS-111 Foundations of Nursing in Chronic Illness I**

3 credits, Winter

This course introduces assessment and common interventions (including technical procedures) for patients with chronic illnesses common across the life span in multiple ethnic groups. The patient's and family's lived experience of the condition is explored. Clinical practice guidelines and research evidence are used to guide clinical judgments in care of individuals with chronic conditions. Multidisciplinary team roles and responsibilities are explored in the context of delivering safe, high quality health care to individuals with chronic conditions (includes practical and legal aspects of delegation). Cultural, ethical, legal and health care delivery issues are explored through case scenarios and clinical practice. Case exemplars include children with asthma, adolescents with a mood disorder, adults with type 2 diabetes, and older adults with dementia. The course includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-110, NRS-110C, and NRS-230. Corequisites: NRS-111C, NRS-231, and NRS-232.

**NRS-111C Foundations of Nursing in Chronic Illness I Clinical**

3 credits, Winter

This course introduces assessment and common interventions (including technical procedures) for clients with chronic illnesses common across the life span in major ethnic groups within Oregon. The client's and family's lived experience of the condition is explored. Clinical practice guidelines and research evidence are used to guide clinical judgments in care of individuals with chronic conditions. Multidisciplinary team roles and responsibilities are considered in the context of delivering safe, high quality health care to individuals with chronic conditions (includes practical and legal aspects of delegation). Cultural, ethical, legal and health care delivery issues are explored through case scenarios and clinical practice. Case exemplars include children with asthma, adolescents with a mood disorder, adults with type 2 diabetes, and older adults with dementia. The course includes classroom and clinical learning experiences with simulation experience as part of total clinical hours. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-110, NRS-110C, and NRS-230. Corequisites: NRS-111, NRS-231, and NRS-232.

**NRS-112 Foundations of Nursing in Acute Care I**

2 credits, Spring

This course introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan who require acute care, including normal childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, patient-centered care. Includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-111, NRS-111C, NRS 231, and NRS-232. Corequisites: NRS-112C and NRS-233.

**NRS-112C Foundations of Nursing in Acute Care I Clinical**

4 credits, Spring

This course introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan who require acute care, including natural childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, client-centered care. Includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-111, NRS-111C, NRS 231, and NRS-232. Corequisites: NRS-112 and NRS-233.

**NRS-221 Chronic Illness II and End of Life**

3 credits, Winter

This course builds on Foundations of Nursing in Chronic Illness I. Chronic Illness II expands the student's knowledge related to family care giving, symptom management and end of life concepts. These concepts are a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, self-determination, and autonomy are explored. Complex skills associated with the assessment and management of concurrent illnesses and conditions are developed within the context of patient and family preferences and needs. Skills related to enhancing communication and collaboration as a member of an interprofessional team and across health care settings are further explored. Exemplars include patients with chronic mental illness and addictions as well as other chronic conditions and disabilities affecting functional status and family relationships. The course includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-222 and NRS-222C. Corequisites: NRS-221C.

**NRS-221C Chronic Illness II and End of Life Clinical**

6 credits, Winter

This course builds on NRS-111 and expands the student's knowledge related to family care giving, symptom management and end of life concepts. These concepts are a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, self determination, and autonomy are explored. Complex skills associated with the assessment and management of concurrent illnesses and conditions are developed within the context of patient and family preferences and needs. Skills related to enhancing communication and collaboration as a member of an interdisciplinary team are further explored. Exemplars include patients with chronic mental illness and addictions as well as other chronic conditions and disabilities affecting functional status and family relationships. The course includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-222 and NRS-222C. Corequisites: NRS-221.

**NRS-222 Nursing in Acute Care II & End of Life**

3 credits, Fall

This course builds on Nursing in Acute Care I, focusing on more complex and/or unstable patient care conditions, some of which may result in death. These patient care conditions require strong noticing and rapid decision making skills. Evidence base is used to support appropriate focused assessments, and effective, efficient nursing interventions. Life span and developmental factors, cultural variables, and legal aspects of care frame the ethical decision-making employed in patient choices for treatment or palliative care for disorders with an acute trajectory. Case scenarios incorporate prioritizing care needs, delegation and supervision, and family and patient teaching for either discharge planning or end-of-life care. Exemplars include acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-112, NRS-112C, and NRS-233. Corequisites: NRS-222C.

**NRS-222C Nursing in Acute Care II & End of Life Clinical**

6 credits, Fall

This course builds on NRS-112, and focuses on more complex and/or unstable patient care conditions, some of which may result in death. These patient care conditions require strong noticing and rapid decision making skills. Evidence base is used to support appropriate focused assessments, and effective, efficient nursing interventions. Life span and developmental factors, cultural variables, and legal aspects of care frame the ethical decision-making employed in patient choices for treatment or palliative care within the acute care setting. Case scenarios incorporate prioritizing care needs, delegation and supervision, and family and patient teaching for either discharge planning or end-of-life care. Exemplars include acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-112, NRS-112C, and NRS-233. Corequisites: NRS-222.

**NRS-224 Integrative Practicum**

2 credits, Spring

This course is designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. Faculty/Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing role in a selected setting, balancing demands of professional nursing and lifelong learner. Analysis and reflection throughout the clinical experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-221 and NRS-221C. Corequisites: NRS-224C.

**NRS-224C Integrative Practicum Clinical**

7 credits, Spring

This course is designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. Faculty/Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing work world in a selected setting, balancing demands of job and lifelong learner. Analysis and reflection throughout the clinical experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-221 and NRS-221C. Corequisites: NRS-224.

**NRS-230 Clinical Pharmacology I**

3 credits, Fall

This course introduces the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. It includes the foundational concepts of principles of pharmacology, nonopioid analgesics, and antibiotics, as well as additional classes of drugs. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, understanding of pharmacokinetics and pharmacodynamics, developmental physiologic considerations, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. Drugs are studied by therapeutic or pharmacological class using an organized framework. Required: Acceptance into the CCC nursing program. Corequisites: NRS-110 and NRS-110C.

**NRS-231 Clinical Pharmacology II**

3 credits, Winter

This sequel to Clinical Pharmacology I continues to provide the theoretical background that enables students to provide safe and effective nursing care related to drugs and natural products to persons throughout the lifespan. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. The course addresses additional classes of drugs and related natural products not contained in NRS-230, Clinical Pharmacology I. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-110, NRS-110C, and NRS-230. Corequisites: NRS-111, NRS-111C, and NRS-232.

**NRS-232 Pathophysiological Processes I**

3 credits, Winter

This course introduces pathophysiological processes that contribute to many different disease states across the lifespan and human responses to those processes. It includes the foundational concepts of cellular adaptation, injury, and death; inflammation and tissue healing; fluid and electrolyte imbalances; and physiologic response to stressors, as well as additional pathophysiological processes. Students will learn to make selective clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-110, NRS-110C, and NRS-230. Corequisites: NRS-111, NRS-111C, and NRS-231.

**NRS-233 Pathophysiological Processes II**

3 credits, Spring

This sequel to NRS-232, Pathophysiological Processes I continues to explore pathophysiological processes that contribute to disease states across the lifespan and human responses to those processes. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. The course addresses additional pathophysiological processes not contained in Pathophysiological Processes I. Required: Acceptance into the CCC nursing program. Prerequisites: NRS-111, NRS-111C, NRS-231, and NRS-232. Corequisites: NRS-112 and NRS-112C.

**NUR****Nursing****NUR-100 Nursing Assistant I**

7 credits, Fall/Winter/Spring/Summer

Prepares the student to perform routine nursing assistant tasks to clients in sub-acute care settings as well as in the community. Includes 80 hours of didactic and skills lab instruction. May not be challenged. Required: Student Petition. Corequisites: NUR-100C.

**NUR-100C Nursing Assistant I Clinical**

0 credits, Fall/Winter/Spring/Summer

Prepares the student to perform routine nursing assistant tasks to clients in hospitals, long-term and skilled care facilities, as well as the community. Includes 82 hours of clinical practicum. May not be challenged. Required: Student Petition. Corequisites: NUR-100.

**NUR-101 Certified Nursing Assistant II**

5 credits, Not Offered Every Term

This course prepares the student to perform routine nursing assistant level II tasks that are needed in the acute or skilled care setting. This course includes concepts of safety and complication prevention. Students will also learn how to communicate a person's response(s) to the nurse, and document and record outcomes of a person's care. Required: Student Petition. Required: Attend CNA II mandatory orientation and complete all required data for CastleBranch. Student must have a current Certified Nursing Assistant I License in the state of Oregon with a copy of a current and active OSBN verification of license letter. Recommended: WRD-098 or placement in WR-121. Student should be 18 years of age or older. Corequisites: NUR-101C.

**NUR-101C Certified Nursing Assistant II Acute Care Clinical**

0 credits, Not Offered Every Term

This course prepares the student to perform routine nursing assistant 2 acute care tasks that are needed in the acute care setting. This course requires a minimum of 30 hours of clinical instruction. Required: Student Petition. Corequisites: NUR-101.

**NUR-160 Fluid and Electrolytes**

2 credits, Not Offered Every Term

Focus of this course is to assist students in the understanding of fluid, electrolytes, acid-base balances and the interpretation of various diagnostic tests related to the client's clinical condition. Limited to healthcare professionals/healthcare students. Prerequisites: BI-233.

**NUR-217 Basic EKG Interpretation I**

1 credit, Not Offered Every Term

This course presents the student with an introductory overview related to the anatomy and physiology of the heart. It also explores normal electrical conduction as well as common variations as evidenced by changes in the waveform on the cardiac monitoring device. The course will also focus on the student's ability to perform cardiac monitoring via 3, 5 and 12 lead monitoring devices.

**NUR-218 Basic EKG Interpretation II**

1 credit, Not Offered Every Term

This course builds upon the knowledge gained in NUR-217. The course will focus on the student's ability to understand and recognize variations in the electrical conduction of the heart as evidenced by changes on the 12-lead EKG. The course will encompass the recognition and treatment modalities of sinus, atrial, junctional and ventricular rhythms as well as heart block. Recognition and treatment of electrical conduction problems related to ischemia, injury and drug/electrolyte imbalances will also be discussed.

**OST****Occupational Skills Training****OST-180 Occupational Skills Training/CWE**

1-12 credits, Not Offered Every Term

Cooperative work experience. Provides students hands-on training in a specific occupational area. The class and program are designed for students who need work-based training and classroom instruction to be competitively employable. Variable Credit: 1-12 credits. May be repeated for up to 24 credits. Required: Student Petition.

**PE****Physical Education****PE-240 Strength & Conditioning Theory & Techniques**

3 credits, Fall/Winter/Spring

An overview of introductory exercise physiology, biomechanics, program design, and exercise techniques that prepares students to design and implement physical training programs and exercise for clients and athletes.

**PE-260 Care and Prevention of Athletic Injuries**

2 credits, Winter

This course introduces the concepts of sports medicine. The course will benefit those students interested in improving their own knowledge as a recreational athlete, or in career areas such as physical and health education, coaching, sports medicine, nursing, physical and occupational therapy. Taping techniques and rehabilitation methods of injury will be discussed and practiced.

**PE-270 Sport and Exercise Psychology**

3 credits, Not Offered Every Term

The course is designed to provide students the basic understanding and knowledge of psychological skills used to improve physical performance in themselves and/or their peers/teammates. The course would be well suited for athletes, coaches or exercise leaders.

**PE-280 Physical Education/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience and training related to the Physical Education field. Covers job problems and procedures, evaluation of students' job performance by qualified college staff and site supervision. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition. Corequisites: CWE-281.

**PE-294A Philosophy of Coaching**

2 credits, Fall/Winter/Spring

This course is designed to enhance the leadership, teaching and management skills of coaches as they relate to interacting with athletes at all levels. Group discussions and seminar sessions relating to coaching philosophies, ethics, practice planning, motivation, and dealing with parents, peers and assistants.

**PH****Physics****PH-121 Astronomy**

4 credits, Fall/Winter/Spring

A lab course including the history of astronomy, the Earth and moon, all planets in our solar system, along with asteroids, meteors and comets. Prerequisites: MTH-065 or MTH-098 with a C or better or placement in MTH-095. Prerequisites: WRD-090 or placement in WRD-098.

**PH-122 General Astronomy**

4 credits, Fall/Winter/Spring

A lab course including the properties of our sun, other stars and stellar evolution. Prerequisites: PH-121 or GS-107.

**PH-123 General Astronomy**

4 credits, Spring

A lab course including star clusters, the properties of our own galaxy, the other galaxies and cosmology. Prerequisites: PH-122.

**PH-150 Preparatory Physics**

3 credits, Spring

This course is intended for students who have not completed high-school physics, but are intending to take either PH-201 or PH-211. Students will develop reasoning skills, and learn problem-solving strategies, measurement units, graph interpretation, and basic physics definitions needed for their General Physics courses. Prerequisite Or Corequisite: MTH-112 or placement in MTH-251.

**PH-201 General Physics**

5 credits, Fall

A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, the conservation laws for momentum and energy, rotational motion, and oscillations. Prerequisites: WRD-090 with a C or better or placement in WRD-098. Prerequisites: MTH-112 or placement in MTH-251. Recommended: A year of high-school physics or PH-150.

**PH-202 General Physics**

5 credits, Winter

A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisites: PH-201.

**PH-203 General Physics**

5 credits, Spring

A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisites: PH-202.

**PH-211 General Physics With Calculus**

5 credits, Fall

A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, conservation laws for momentum and energy, rotational motion, and oscillations. Prerequisite or Corequisite: MTH-252. Prerequisite or Corequisite: WRD-090 with a C or better or placement in WRD-098. Recommended: MTH-254. A year of high-school physics or PH-150.

**PH-212 General Physics With Calculus**

5 credits, Winter

A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisites: MTH-252 and PH-211. Recommended: MTH-254.

**PH-213 General Physics With Calculus**

5 credits, Spring

A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisites: PH-212.

**PHL****Philosophy****PHL-101 Philosophical Problems**

4 credits, Fall/Winter/Spring

Introduces basic philosophical questions such as: What is reality? What is knowledge? What is truth? Can humans freely choose? What is human awareness? What is a meaningful life? Recommended: WRD-098 or placement in WR-121.

**PHL-102 Ethics**

4 credits, Fall/Winter/Spring

Introduces the study of morality with concepts of good, harm, habits, character, perception, behavior and action. Also considers the different theories of human capacity for responsibility. Recommended: WRD-098 or placement in WR-121.

**PHL-103 Critical Reasoning**

4 credits, Fall/Winter/Spring

Helps students identify and understand the process by which they themselves and others arrive at conclusions; improves their critical reasoning skills; introduces basic logical concepts of argument; and gives opportunity for students to apply course skills to relevant matters. Recommended: WRD-098 or placement in WR-121.

**PHL-205 Moral Issues**

4 credits, Not Offered Every Term

Examines contemporary moral issues from a selection of different philosophical perspectives. Provides some historical context as background in order to understand our current moment. Recommended: WRD-098 or placement in WR-121.

**PHL-210 Philosophy of Religion**

4 credits, Not Offered Every Term

Investigates religious concepts across varying religious expressions. Uses philosophical tools to explore the creation, development and interpretation of these concepts across culture and history. Recommended: WRD-098 or placement in WR-121.

**PHL-213 Asian Philosophy**

4 credits, Not Offered Every Term

Examines the underlying thought systems connected with Hinduism, Buddhism, Taoism, and Confucianism. Topics include: the nature of reality, the self, causality, knowledge, and ethics. Recommended: WRD-098 or placement in WR-121.

**PHL-216 Ancient Philosophy**

4 credits, Not Offered Every Term

Explores the roots of Western philosophy by delving into ancient Greek philosophy with a focus on the works of Plato and Aristotle. Includes an examination of the birth of Western science from its philosophical origins. Recommended: WRD-098 or placement in WR-121.

**PIE****Program for Intensive English****PIE-012 Beginning ESL**

0 credits, Not Offered Every Term

English language learners speak and listen to simple words, phrases, questions, statements and commands using common English vocabulary in simple, highly-structured tasks. Required: Student Petition.

**PIE-014 Beginning Reading & Writing**

0 credits, Not Offered Every Term

English language learners read and write the alphabet, sight words, and simple sentences. Required: Student Petition.

**PIE-016 Integrated Beginning ESL**

0 credits, Fall/Winter/Spring/Summer

English language learners are introduced to the basic language necessary to function in day-to-day American society; language functions are taught in the contexts of work, family and community. Required: Student Petition.

**PIE-020 Upper Beginning Grammar**

0 credits, Fall/Winter/Spring/Summer

English language learners study and practice basic verb forms (simple present, and present progressive) and adverbs of frequency in written and spoken English. Required: Student Petition.

**PIE-024 Upper Beginning Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read short texts to improve reading skills, write simple, compound, and complex sentences, and write related sentences in paragraph form for the contexts of school, work, family and community. Required: Student Petition.

**PIE-030 Intermediate Grammar A**

0 credits, Fall/Spring  
One of a two-part series. English language learners study and practice simple present, present progressive, and future verb forms and modals of ability, permission, and advice. Required: Student Petition.

**PIE-031 Intermediate Grammar B**

0 credits, Summer/Winter  
One of a two-part series. English language learners study and practice simple past verb forms, 'used to,' present perfect verb forms with time expressions, and comparative and superlative adjectives and adverbs. Required: Student Petition.

**PIE-032 Intermediate Conversation**

0 credits, Fall/Winter/Spring/Summer  
English language learners study and practice speaking and listening skills and strategies in structured tasks to improve fluency in the contexts of school, work, family and community. Required: Student Petition.

**PIE-034 Intermediate Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read a variety of texts to improve reading skills, and write paragraphs focused on a single topic developed with logically organized facts and details for the contexts of school, work, family and community. Required: Student Petition.

**PIE-042 Upper Intermediate Conversation**

0 credits, Fall/Winter/Spring/Summer  
English language learners study and practice speaking and listening skills and strategies for independent communication to improve fluency in the contexts of school, work, family and community. Required: Student Petition.

**PIE-044 Upper Intermediate Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners read a variety of texts to improve reading skills, and produce basic multi-paragraph texts for the contexts of school, work, family and community. Required: Student Petition.

**PIE-046 Editing for Better Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners improve their writing through editing. They will also engage in extended reading to provide a context for writing. Required: Student Petition.

**PIE-050 Advanced Grammar A**

0 credits, Not Offered Every Term  
One of a three-part series. English language learners study and practice modals, adverb clauses, and discourse connectors in written and spoken English. Required: Student Petition.

**PIE-051 Advanced Grammar B**

0 credits, Not Offered Every Term  
One of a three-part series. English language learners study and practice count/non-count nouns, definite/indefinite articles, and noun clauses in written and spoken English. Required: Student Petition.

**PIE-052 Advanced Communication Skills 1**

0 credits, Fall/Spring  
English language learners practice speaking and listening strategies for effective communication in discussions, presentations, lectures, note-taking, and group projects. The course builds vocabulary, critical thinking skills, and an awareness of non-verbal communication. The focus of this course is to prepare students for college success. Required: Student Petition.

**PIE-053 Advanced Communication Skills 2**

0 credits, Summer/Winter  
English language learners practice speaking and listening strategies for effective communication for discussions, interviews, presentations, and note-taking to improve fluency in speaking and listening. Students will study the important effect intonation and body language have on meaning, build vocabulary and critical thinking skills, and develop confidence in speaking with purpose. The focus of this course is to prepare students for success in the workplace and community. Required: Student Petition.

**PIE-054 Advanced Reading & Writing**

0 credits, Fall/Winter/Spring/Summer  
English language learners develop writing skills including summarizing, response writing, and paraphrasing, and improve writing fluency. Develop reading skills and fluency through reading a range of texts on a variety of topics. Required: Student Petition.

**PIE-055 Advanced Grammar C**

0 credits, Not Offered Every Term  
One of a three-part series. English language learners study and practice gerunds, infinitives, passive voice, and adjective clauses in written and spoken English. Required: Student Petition.

**PIE-060 Vocabulary Building 1**

0 credits, Not Offered Every Term  
One of a two-part series. English language learners develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and the Academic Word List, and develop their vocabulary acquisition skills. Required: Student Petition.

**PIE-061 Vocabulary Building 2**

0 credits, Not Offered Every Term  
One of a two-part series. English language learners develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and the Academic Word List, and develop their vocabulary acquisition skills. Required: Student Petition.

**PIE-062 ESL Reading 1**

0 credits, Not Offered Every Term  
English language learners at all levels improve their reading fluency and expand and solidify their English vocabulary as needed for more advanced ESL and everyday life. Required: Student Petition.

**PIE-063 ESL Reading 2**

0 credits, Not Offered Every Term  
English language learners at all levels improve their reading fluency and expand and solidify their English vocabulary as needed for more advanced ESL and everyday life. The course can be repeated, as learners read texts of progressively greater challenge, up to the college reading level. Students who have completed ESL Reading 1 develop their reading skills at a higher level in ESL Reading 2. Required: Student Petition.

**PIE-067 Spelling**

0 credits, Not Offered Every Term  
English language learners learn about and practice English spelling patterns and rules and will individualize instruction to address spelling challenges. Required: Student Petition.

**PIE-069 Pronunciation**

0 credits, Not Offered Every Year  
English language learners develop pronunciation skills and knowledge to improve speech clarity, listening effectiveness, and pronunciation of written words. Required: Student Petition.

**PIE-088 Beginning ESL Computer Skills Lab**

0 credits, Fall/Winter/Spring/Summer  
English language learners acquire basic computer skills. Required: Student Petition.

**PIE-094 TOEFL/TOEIC Preparation**

0 credits, Fall/Winter/Spring/Summer  
Prepares students for the Test of English as a Foreign Language (TOEFL) and the Test of English for International Communication (TOEIC) by improving listening, grammar, reading and writing skills. It includes familiarization with the test components, test-taking techniques, strategies and computer skills. Required: Student Petition.

**PIE-095 PIE Tutoring**

0 credits, Fall/Winter/Spring/Summer  
English language learners in the Program for Intensive English receive one-on-one instruction in conversation, pronunciation, reading, grammar, writing, or GED preparation. The student meets with a tutor or instructor and work on the above skill areas. Required: Student Petition.

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**PS****Political Science****PS-200 Introduction to Political Science**

4 credits, Summer/Fall/Spring  
A general introduction to the field of political science. Introduces and expands on basic political concepts and themes, explores political theory and ideology, and considers the dynamics of political institutions and government and how both are integrated into political life. Recommended: WRD-098 or placement in WR-121.

**PS-201 American Government and Politics**

4 credits, Summer/Fall/Winter  
Examines the founding principles of the American government, as well as the Constitution, the separation of powers, and the three branches of government, political parties and elections, and the role of interest groups and the media in the political process. In addition, assesses the growing power of the executive branch, the expansion and reach of the federal bureaucracy, governmental policies, and the civil liberties and civil rights of American citizens. Recommended: WRD-090 or placement in WRD-098.

**PS-203 State and Local Governments**

4 credits, Not Offered Every Term  
Introduces students to state and local governments in the United States, with an emphasis on Oregon politics at the state and local level. Assesses the structure, functions, and processes of state, county, and municipal governments, as well as the role of the legislative, executive, and judicial branches of government and the separation of powers at the state level. In addition, examines the role of political parties, elections, and the public policy process at the state and local level. Recommended: WRD-090 or placement in WRD-098.

**PS-204 Introduction to Comparative Politics**

4 credits, Not Offered Every Term  
Explores the various ideologies, institutions, and processes that constitute the nation-states that make up the world political system. Introduces students to the comparative method of political science. Assesses the fundamental differences between presidential and parliamentary systems, and the various political systems and governments around the world within the context of current world politics. In addition, examines the creation, the role, and the development of political and government institutions from a comparative perspective. Recommended: WRD-090 or placement in WRD-098.

**PS-205 International Relations**

4 credits, Not Offered Every Term  
Introduces theoretical and methodological tools for the analysis of contemporary world politics. Explores international relations by examining the institutions that constitute the international system. In addition, examines international institutions and nation-state behavior and surveys foreign policy models, diplomacy, peacekeeping and terrorism. Recommended: WRD-090 or placement in WRD-098.

**PS-225 Introduction to Political Ideologies**

4 credits, Not Offered Every Term  
Introduces students to various ideological constructs; the origins and development of various political ideologies; the political theorists identified with specific ideologies; and examines the role of ideology in modern politics and governance. Recommended: WRD-090 or placement in WRD-098.

**PS-280 Political Science/CWE**

2-6 credits, Fall/Winter/Spring  
Cooperative work experience. Provides students with on-the-job work experience in the field of political science. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**PS-297 Introduction to Environmental Politics**

4 credits, Not Offered Every Term  
Explores and assesses the politics informing environmental policy; the tension between politics, policy and scientific expertise; the role of the legislative, executive, and judicial branches of government in crafting and implementing environmental policy; and the critical impact non-governmental institutions and pressure groups have on environmental policy development and outcomes. Recommended: WRD-098 or placement in WR-121.

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**PSY****Psychology****PSY-101 Human Relations**

3 credits, Fall/Winter/Spring/Summer  
Introduction to interpersonal relationships and human relations in a social context. Includes individual and group activities, lecture, and discussions with an emphasis on student participation. Recommended: WRD-090 or placement in WRD-098.

**PSY-110 Psychology: An Overview**

4 credits, Not Offered Every Year

A general introduction to the field of psychology. Explores a wide variety of topics. Recommended: WRD-090 or placement in WRD-098.

**PSY-200 Psychology As A Natural Science**

4 credits, Fall/Winter/Spring

Introduction to physiological psychology, the study of how the nervous system produces behavior and cognition. Further topics will include consciousness, sleep, memory, and language. Recommended: WRD-090 or placement in WRD-098.

**PSY-205 Psychology As a Social Science**

4 credits, Fall/Winter/Spring

Principles of learning and social psychology, the study of how groups affect the individual. Further topics may include motivation, personality, human development, and stress. Recommended: WRD-090 or placement in WRD-098.

**PSY-215 Introduction to Developmental Psychology**

4 credits, Fall/Winter/Spring/Summer

Research and theories regarding the development of the individual from conception to death, including physical, social and cognitive changes. Prerequisite or Corequisite: WRD-098 or placement in WR-121.

**PSY-219 Introduction to Abnormal Psychology**

4 credits, Fall/Winter/Spring

Introduction to abnormal psychology, including disorders and approaches to treatment. Prerequisite or Corequisite: WRD-098 or placement in WR-121.

**PSY-231 Introduction to Human Sexuality**

4 credits, Not Offered Every Term

Introduction to research and theories of human sexual behavior, including: sexual relationships, communication and intimacy, sex roles, the development of gender, social trends regarding sexuality, human sexual response, biology of sexuality, and conception. Prerequisite or Corequisite: WRD-098 or placement in WR-121.

**PSY-280 Psychology/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of psychology. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**R****Religion****R-101 Judaism and Foundations of Religion**

4 credits, Fall

An introduction to religious topics, meaning of sacred, the nature of myth and story, ideas of God/god, ancient religions, and Judaism. Recommended: WRD-090 or placement in WRD-098.

**R-102 Christianity and Islam**

4 credits, Winter

An introduction to Christianity and Islam, New Testament and Quran, the nature of Trinity and Tawhid, and includes the history and philosophy of other Western religious developments. Recommended: WRD-090 or placement in WRD-098.

**R-103 Asian Religions**

4 credits, Spring

An introduction to the history, ideas, and philosophy of Asian religions including Hinduism, Buddhism, Jainism, Sikhism, Taoism, Confucianism, and Shintoism. Examine Asian religions' impact on contemporary culture. Recommended: WRD-090 or placement in WRD-098.

**R-204 History of Christianity**

4 credits, Not Offered Every Year

Covers early Christianity, the Apostles, and the development of the New Testament. Examines post-apostolic Christianity, developments through the Middle Ages, Renaissance, Reformation, and the Modern Age. Contemporary topics include Christianity in conflict, ethical and social religious issues, and the face of contemporary Christianity. Recommended: WRD-090 or placement in WRD-098.

**R-210 World Religions**

4 credits, Not Offered Every Term

Examines religions and philosophies from around the world through film, text, and/or online presentations. Introduces Hinduism, Buddhism, Chinese/Japanese religions, Christianity, Judaism, Islam, and many other religious systems. Recommended: WRD-090 or placement in WRD-098

**R-211 History of the Old Testament**

4 credits, Not Offered Every Term

An introduction to the Old Testament/Tanakh that covers the early developments of the Hebrew community: Patriarchs, Abraham, Moses, and Sinai. Examines Old Testament monarchy, prophets, and wisdom literature. Examines modern theories of biblical interpretation. Recommended: WRD-090 or placement in WRD-098

**R-212 History of the New Testament**

4 credits, Not Offered Every Term

An introduction to the New Testament that includes the first century social, political, and religious influences on the New Testament texts, the life of Jesus, the Pauline letters, and other early Christian writings. Recommended: WRD-090 or placement in WRD-098

**R-280 Religion/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of religion. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**RET****Renewable Energy Technology**

For additional information, contact the Industrial Technology Department at 503-594-3318.

**RET-200 Renewable Energy Systems**

4 credits, Fall

This course provides a survey of various renewable energy systems. Participants will learn about the benefits and limitations of each type of energy source as well as their functional principles. Students will participate in several field learning exercises related to energy systems. The intended audiences are technical students wishing to explore the Renewable Energy field and students from the humanities and social sciences wanting a better understanding of this socially important technology.



**RET-209 Renewable Energy I: Energy Efficiency**

3 credits, Winter

This course concentrates on the conservation of scarce energy resources in residential, commercial and industrial applications. The course will examine the common sources of energy loss in building systems and homes, industrial processes and transportation. Students will be introduced to residential energy audits and mitigation. Topics will also include regenerative transportation systems, LEED certification, test instruments, insulation values, heat exchangers and financial payback period. Includes hands-on lab exercises. Recommended: RET-200.

**RET-211 Renewable Energy II: System Fundamentals**

3 credits, Spring

This course in renewable systems will provide in-depth understanding of the technology, economics and policies relevant to each type of energy source. Analysis techniques to evaluate renewable energy applications from a systems design and selection perspective will be presented. Topics include physical operating principles, theoretical vs. actual system output, energy storage, efficiency and cost analysis. Includes hands-on lab exercises. Prerequisites: RET-209.

**RET-213 Renewable Energy III: Installation & Maintenance**

3 credits, Fall

The third in a series of technical courses, Renewable Energy III: Installation and Maintenance will provide an introduction to installation and maintenance of renewable energy systems for commercial and residential installations. Students will apply their knowledge of electro-mechanical systems to the application of these systems. Topics covered will include site survey, site preparation, building codes, measurement tools, preventative maintenance and worksite safety. Includes hands-on lab exercises. Prerequisites: RET-211.

**RET-215 Renewable Energy IV: Systems Design**

3 credits, Winter

This fourth course in the series will concentrate on systems design for renewable energy applications. Students will work together and apply concepts to evaluate, design and select one or more renewable energy systems for solar, wind or micro-hydro installations. Topics will include site surveys, structural elements, electrical generators, energy storage and electrical inversion. Prerequisites: RET-213.

**RET-217 Renewable Energy Capstone Project**

3 credits, Spring

This final class in the Renewable Energy series will concentrate on a capstone project. Students will evaluate a proposal for an alternative energy solution and then design an installation to meet the needs of the proposal. Students will be expected to perform a site survey, quantify energy requirements, select appropriate technologies, calculate the payback period and finally fabricate an actual or conceptual energy solution where appropriate. Prerequisites: RET-215.

**RET-240 Alternative Fuels**

4 credits, Fall

Offers students familiarity and entry level skills to work with alternative fuel systems. Explores (technically, economically and ecologically) the following alternative fuels: bio-diesel, vegetable oils, electricity, ethanol, hydrogen, propane, methanol, natural gas, heat engines, fuel cell & hybrid vehicles.

**RET-280 Renewable Energy/CWE**

1-12 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Major emphasis on work-based learning experience in the renewable energy field. Coordination of instruction and evaluation of student job performance will be provided by college faculty in conjunction with the student's employer/supervisor. Variable Credit: 1-12 credits. Required: Student Petition. Corequisites: CWE-281.

**SAR****Search and Rescue****SAR-102 Rescue Craft: Systems, Knots, and Anchors**

2 credits, Not Offered Every Term

This course covers an introduction to basic components of a rope rescue system. The course presents common rescue skills, current technology, and identification of risk factors in rope rescue. It covers proper application and use of common rescue equipment to limit risk. Understanding advantages and disadvantages of anchors and anchors systems for single person and rescue loads is also covered. Students will get in-class, hands-on experience with knot craft, mechanical advantage systems as well as natural and artificial anchors. This course meets the requirements for NFPA Firefighter 1-Rope and Knots as well as DPSST Course Number: 15F042/17F019.

**SAR-103 Rappelling and Self Rescue**

1 credit, Not Offered Every Term

The course covers the skills and techniques required to safely leave a vertical realm in an emergency. Students will be introduced to rappelling, self and partner rescue in sport climbing which includes planning and anticipating potential challenges throughout the rescue. Students will learn the skill and technique differences between personal and partner rescue through theoretical and hands-on practice in several systems.

**SAR-201 Technical Rope Rescue: Operations Level**

1 credit, Not Offered Every Term

This course provides students with the fundamentals of rope rescue in the low-angle environment. Students learn and practice skills pre-planning and size-up of rope rescue operations, knots, anchor systems, belay operations, ascending and descending lines, mechanical advantage systems, patient packaging & litter attending. Students learn how to safely navigate low-angle or over-the-bank rescue situations and assist rescuers in high-angle environments. Completion of the TRR:OL class satisfies the requirements in NFPA 1670 and 1006 for Technical Rope Technician level training and is recognized by Oregon DPSST. Recommended Prerequisite Or Corequisite: SAR-102.

**SAR-202 Technical Rope Rescue: Technician Level**

2 credits, Not Offered Every Term

This course is designed to take students from basic over-the-bank rescues to progressively more vertical scenarios. Students learn and practice such skills as preplanning, size-up and scene management, ascending and descending, belaying, mechanical advantage systems, lowering and raising systems, patient packaging and litter attending, tethers, and highlines. Completion of the TRR:TL class satisfies the requirements in NFPA 1670 and 1006 for Technical Rope Technician level training and is recognized by Oregon DPSST. In addition, Technician level training is mandatory for inclusion on many Federal Emergency Management Agency Teams at different levels. Recommended: SAR-102 and SAR-201.

**SAR-203 Technical Rope Rescue: Advanced/Specialist**

2 credits, Not Offered Every Term

This course is for rope rescue team members who already have completed a comprehensive basic training and want to continue to specialize. This training continues where the introductory course finishes. This course examines advanced technical solutions. It elaborates on the use of multi-pods, monopod and A-frames, various configurations of steep, diagonal and horizontal spans, the use of multiple track lines in high-line operations, industrial lead climbing, loads and forces, incident management and scenario training. This training is consistent with NFPA 1670 and 1006 standards for technician level. Prerequisites: SAR-202.

**SAR-204 Safe Work At Heights and Coworker Rescue at Heights**

1 credit, Not Offered Every Term

The course teaches participants to deal with a colleague who has fallen and is hanging helplessly in their fall protection system. Using simple techniques and industry standard equipment, students will learn how a colleague can be freed from a dangerous situation after they have dropped into their fall arrest system. The rapid release of this trapped person must be the student's highest priority, to prevent further injury. In accordance with the law on working conditions and the consequent duty of care, an employer is required to prepare employees for this possible scenario. Generally, with a few simple tools, this problem can easily be solved.

**SBM****Small Business Management**

For additional information, contact the Small Business Development Center at 503-594-0738.

**SBM-011 Property Management Pre-License**

0 credits, Fall/Spring

Prepares students to qualify for the Oregon Real Estate Property Management License exam by studying laws and statutes pertaining to the licensing and professional property management activity required by all licensees of the State of Oregon.

**SBM-019 Innovation Bridge**

0 credits, Fall/Winter/Spring

Provides a methodology to help current and hopeful entrepreneurs find the business value of new ideas, products, or concepts. The course takes students through a process that prompts new ways of thinking about the commercial potential of their ideas, and helps them shape their innovative idea into a complete product.

**SBM-020 Small Business Greenhouse**

0 credits, Fall/Spring

Two-term intensive training program designed to assist entrepreneurs in planning their business startups, and to develop existing businesses to make them more profitable and to create jobs. Students do extensive individual work on developing business plans with counseling from instructor.

**SBM-021 Small Business Management I**

0 credits, Fall

Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. Class topics emphasize financial analysis, goals, and communication.

**SBM-021A Small Business Management I**

0 credits, Fall

This class prepares small business owners to work ON the business rather than IN the business. Using the GrowthWheel toolbox students will work on four key challenges every business, large or small, must address: an attractive business concept; building lasting customer relations; maintaining profitable operations; and building a strong organizational structure.

**SBM-021B Small Business Management I**

0 credits, Winter

Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. The SBM class will address the challenges of creating an attractive business concept, building lasting customer relations, maintaining profitable operations, and developing strong organizational structure.

**SBM-021C Small Business Management I**

0 credits, Spring

Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. The SBM class will address the challenges of creating an attractive business concept, building lasting customer relations, maintaining profitable operations, and developing strong organizational structure.

**SBM-024 Succession Planning**

0 credits, Fall/Winter/Spring

Learn how to harvest your small farm business, not just your crops. Succession planning in small farm ownership is a critical and complex 3-10 year process that, when done properly, helps farmers maximize their return on their farm investment so they can reach their long-term goals in retirement. This hands-on, 12 month program is designed to teach farmers and individuals who want to buy a farm, how to make it happen. Course consists of monthly class meetings, individual business counseling, peer networking, and work in/on the business.

**SBM-024C Succession Planning**

0 credits, Spring

Learn how to harvest your small farm business, not just your crops. Succession planning in small farm ownership is a critical and complex 3-10 year process that, when done properly, helps farmers maximize their return on their farm investment so they can reach their long-term goals in retirement. This hands-on, 3 month program is designed to teach farmers and individuals who want to buy a farm, how to make it happen. Course consists of monthly class meetings, individual business counseling, peer networking, and work in/on the business.

**SBM-025 Succession Planning**

0 credits, Fall

Learn how to harvest your small farm business, not just your crops. Succession planning in small farm ownership is a critical and complex 3-10 year process that, when done properly, helps farmers maximize their return on their farm investment so they can reach their long-term goals in retirement. This hands-on 12 month program is designed to teach farmers and individuals who want to buy a farm, how to make it happen. Course consists of monthly class meetings, individual business counseling, peer networking and work in/on the business.

**SBM-028 Small Business Management I For Construction Contractors**

0 credits, Fall/Winter/Spring

Provides information on starting and growing a successful construction business. Teaches students marketing techniques, estimating methods, tax strategies and recordkeeping. Discusses best practices of working with subcontractors and hiring and managing employees.

**SM****Microelectronics Systems Technology**

Courses listed with the SM prefix and courses listed in the Electronics Systems Technology section with the EET prefix are the main core classes for the Microelectronics Systems Technology program. For additional information contact the Industrial Technology Department at 503-594-3318.

**SM-136 Photolithography**

2 credits, Winter

The course covers the relationship between theoretical and practical aspects of current methods and equipment used in photolithography. It also includes troubleshooting common process and equipment-related problems. Recommended: SM-150.

**SM-160 Semiconductor Processing II**

2 credits, Not Offered Every Term

Provides an overview of basic processes involved in the fabrication of finished silicon wafers, oxidation and deposition processes. Troubleshooting of common equipment is emphasized. Recommended: SM-150.

**SM-170 Semiconductor Processing III**

2 credits, Not Offered Every Term

Covers the essential process and equipment issues related to the etching, diffusion and ion implantation. Troubleshooting of common equipment and process related problems are emphasized. Recommended: SM-150.

**SM-229 Vacuum Technology**

2 credits, Spring

Focuses on elementary theory and practice of vacuum equipment for microelectronics processing. Students study vacuum fundamentals, pumps, and equipment used in vacuum systems. Recommended: SM-150.

**SM-280 Electronics & Microelectronics/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in the high-tech industry. Coordination of instruction will occur with industry and the manufacturing and cooperative work departments. Variable Credit: 1-6 credits. Required: Student Petition. Corequisites: CWE-281.

**SOC****Sociology****SOC-204 Introduction to Sociology**

4 credits, Fall/Winter/Spring/Summer

This course offers an introduction to the field of sociology. Sociology is the scientific study of human behavior in society. In this course we will introduce and discuss issues including the sociological imagination, culture, socialization, deviance, authority, religion, science and methods of sociological research. Various sociological theories will be introduced and utilized to explore and enhance our understanding of these issues. Recommended: WRD-098 or placement in WR-121.

**SOC-205 Social Stratification & Social Systems**

4 credits, Fall/Winter/Spring/Summer

This course explores the inequality that exists in our society. Social stratification is the unequal distribution of resources and opportunities in a society. Issues like gender, race, poverty, education and capitalism will be explored and discussed in an attempt to understand their impact on the inequality that we experience in our society. Various sociological theories will be introduced and utilized to explore and enhance our understanding of these issues. Recommended: WRD-098 or placement in WR-121.

**SOC-206 Institutions & Social Change**

4 credits, Fall/Winter/Spring/Summer

This course explores how people can change their society. Social change is a process that can be used by people in a society, to change and improve the functioning of their society. This course will explore and discuss how people-led social movements, in the past and in the present, can be developed, organized, and implemented to accomplish social change. Recommended: WRD-098 or placement in WR-121.

**SOC-210 Marriage, Family, & Intimate Relations**

4 credits, Fall/Winter/Spring

This course will introduce students to the study of marriage, intimate relations and family systems from the sociological viewpoint. Students will examine the ways in which race, class, gender, sexuality, community, and society influence patterns of courtship, intimate relations, marriage, and family, and explore the various challenges facing families today. Recommended: WRD-098 or placement in WR-121.

**SOC-225 Social Problems**

4 credits, Fall/Winter/Spring/Summer

Applies the sociological framework to the study of social problems, their identification, analysis of causes and possible solutions. Problems explored may include mental disorders, drug and alcohol addiction, crime and delinquency, group discrimination, inequality, poverty, alienation, domestic and international violence, environment, and energy. Recommended: WRD-098 or placement in WR-121.

**SOC-280 Sociology/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative Work Experience. This course allows students who are already working in the field of sociology to earn college credit for that work. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**SPN****Spanish****SPN-101 First-Year Spanish I**

4 credits, Fall/Winter/Spring/Summer

First of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented. Recommended: WRD-098 or placement in WR-121.

**SPN-102 First-Year Spanish II**

4 credits, Fall/Winter/Spring/Summer

Second of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented. Prerequisites: SPN-101. Recommended: WRD-098 or placement in WR-121.

**SPN-103 First-Year Spanish III**

4 credits, Spring/Summer

Third of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented. Prerequisites: SPN-102.

**SPN-201 Second-Year Spanish I**

4 credits, Fall

First of a three-term intermediate, multimedia course. Focus is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture. Prerequisites: SPN-103 or Student Petition.

**SPN-202 Second-Year Spanish II**

4 credits, Winter

Second of a three-term intermediate, multimedia course. Focus is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture. Prerequisites: SPN-201.

**SPN-203 Second-Year Spanish III**

4 credits, Spring

Third of a three-term, intermediate, multimedia course. Focus is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture. Prerequisites: SPN-202.

**SPN-211 Intermediate Spanish Conversation**

3 credits, Fall

The emphasis of the course is on the continued development of oral proficiency, including expanding vocabulary and broadening the students cultural awareness of the Spanish-speaking world. The course addresses Spanish vocabulary and expressions related to specific purposes. Purposes vary by term. Grammatical explanations will be kept to a minimum. Recommended: SPN-203.

**SPN-213 Intermediate Spanish Conversation**

3 credits, Not Offered Every Term

Continues improving intermediate-level Spanish conversation through the discussion of readings and situations related to selected special topics. Spanish culture related to the topics will be included. Simulated role plays are used to practice conversational strategies for use in real-life situations. The emphasis in this course is in helping students to gain confidence in their communication skills. The topic of the course varies from term to term. Required: Basic knowledge of the Spanish language. Prerequisites: SPN-203 or SPN-211 or SPN-212 or Student Petition.

**SSC****Social Science****SSC-160 Faith & Reason**

5 credits, Not Offered Every Term

Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: WRD-090 or placement in WRD-098.

**SSC-235 Perspectives on Terrorism**

4 credits, Not Offered Every Term

Examines multiple perspectives of terrorism and investigates their assumptions and beliefs. Perspectives will include historical and psychological approaches as well as those of other academic disciplines. Recommended: WRD-090 or placement in WR-121.

**SSC-237 Perspectives on Democracy and Dialogue**

4 credits, Not Offered Every Term

This course gives students the opportunity to practice the fundamental keystone of democracy: dialogue. The course will explore the variety of American political thought and philosophies through conversations with others in the community, crossing the political spectrum as well as broaching the lines of urban/rural context, socio-economic class, racial and ethnic identity, sex-gender identification, sexuality, age, religious affiliation and non-affiliation, and spiritual practices. Recommended: WRD-098 or placement in WR-121.

**SSC-240 American Military Conflict: Wars of National Identity**

4 credits, Not Offered Every Term  
Examines America's wars of national identity, principally the American Revolution and the Civil War. Explores characteristics of such wars, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian. Recommended: WRD-098 or placement in WR-121.

**SSC-241 American Military Conflict: Global War**

4 credits, Not Offered Every Term  
Examines America as a global power in 20th Century conflicts-- World Wars I and II, the Cold War and possible future global conflicts. Explores characteristics of global war, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian. Recommended: WRD-098 or placement in WR-121.

**SSC-242 American Military Conflict: Asymmetric Warfare**

4 credits, Not Offered Every Term  
Examines America's military experience in asymmetric conflicts from colonial times to the present. Explores characteristics of asymmetric war, variations over time and space, and impacts on American society and culture, both military and civilian. Recommended: WRD-098 or placement in WR-121.

**TA****Theatre Arts****TA-101 Appreciation of Theatre**

4 credits, Fall  
Students will be introduced to the many aspects of theatre arts by attending multiple area productions. Plays will be reviewed and evaluated through writing assignments and discussions. Recommended: WRD-098 or placement in WR-121.

**TA-102 Appreciation of Theatre**

4 credits, Winter  
Students will be introduced to the many aspects of theatre arts at an intermediate level by attending multiple area productions. Plays will be reviewed and evaluated through writing assignments and discussions. Recommended: TA-101 and WRD-098 or placement in WR-121.

**TA-103 Appreciation of Theatre**

4 credits, Not Offered Every Year  
Students will analyze the many aspects of theatre arts at an advanced level by attending multiple area productions. Plays will be reviewed and evaluated through writing assignments and discussions. Recommended: WRD-090 or placement in WR-121. TA-101 and TA-102.

**TA-111 Fundamentals of Technical Theatre**

4 credits, Summer/Fall  
First class of a three part series. Basic study and practice in the collaborative techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction, and lighting. Flexible laboratory sessions available. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain an independent journal/study (12 total hours) of outside class activity and/or observations of Technical Theatre applications.

**TA-112 Fundamentals of Technical Theatre**

4 credits, Winter  
Second class of a three-part series. Intermediate study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction, and lighting. Flexible laboratory sessions available. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain an independent journal/study (12 total hours) of outside class activity and observations of Technical Theatre applications.

**TA-113 Fundamentals of Technical Theatre**

4 credits, Spring  
Third class in a three-part series. Advanced study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction, and lighting. Flexible laboratory sessions available. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain a journal/study (12 total hours) of outside class activity and observations of Technical Theatre applications.

**TA-121 Costuming I**

3 credits, Fall  
First in a three-part series. Study and practice in theatrical costuming techniques for various types of live theatrical productions. Students will analyze scripts, research historical background, and study period fashion to develop character wardrobes. This is a project-based course where students will construct and tailor costume and prop pieces for cast members. No experience necessary; limited seats.

**TA-122 Costuming II**

3 credits, Winter  
Second in a three-part series. Study and practice in theatrical costuming techniques for various types of live theatrical productions. Students will analyze scripts, research historical background, and study period fashion to develop character wardrobes. This is a project-based course where students will construct and tailor costume and prop pieces for cast members. No experience necessary; limited seats. Recommended: TA-121.

**TA-141 Acting I**

4 credits, Fall  
Studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers. Introduction to vocal, physical, and script analysis skills. Recommended: WRD-098 or placement in WR-121.

**TA-142 Acting II**

4 credits, Winter

Further studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers are the basic teaching approaches. Special focus on script analysis and language skills. Recommended: TA-141 and WRD-098 or placement in WR-121.

**TA-143 Acting III**

4 credits, Spring

An in-depth study of the methods, techniques, and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers are the basic teaching approaches. Focus on movement and character creation. Recommended: WRD-098 and TA-141 or TA-142.

**TA-153 Theatre Rehearsal & Performance**

1-3 credits, Fall/Winter/Spring

Training in theatre production through intensive study and rehearsal of scenes and plays for public performance. Variable Credit: 1-3 credits. May be repeated for up to 6 credits. Required: Student Petition. Required: Successful audition/interview. Recommended: TA-141 and TA-142, or TA-143; or TA-111 and TA-112, or TA-113.

**TA-195 Student Performance Showcase**

1-3 credits, Fall/Winter/Spring

Training in special forms of theatrical presentation through in-class intensive preparation, study, and program development for public presentation, including comedy improvisation, stand-up comedy, and student directed one-act plays. Roles in one-act plays require a successful audition. Other opportunities open to all. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

**TA-211 Technical Theatre Study**

4 credits, Summer/Fall

Comprehensive study and practice in presentational graphics, scene design, lighting design, and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC's main stage productions. Prerequisites: TA-111, TA-112, and TA-113. Recommended: WRD-098 or placement in WR-121.

**TA-212 Technical Theatre Study**

4 credits, Winter

Second class of a three part series. Comprehensive study and practice in presentational graphics, scene design, lighting design and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC's main stage productions. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain a journal/study (12 total hours) of outside class activities and observing Technical Theatre applications. Prerequisites: TA-111, TA-112, and TA-113. Recommended: WRD-098 or placement in WR-121.

**TA-213 Technical Theatre Study**

4 credits, Spring

Third class in a three-part series. Comprehensive study and practice in presentational graphics, scene design, with specific focus in lighting design and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC's main stage productions. Students must participate in the focus, performance and strike (10 total hours) of a production. Students are required to maintain a journal/study (12 total hours) of outside class activity identifying and observing Technical Theatre applications. Prerequisites: TA-111, TA-112, and TA-113. Recommended: WRD-098 or placement in WR-121.

**TA-253 Theatre Rehearsal & Performance**

1-3 credits, Fall/Winter/Spring

Intermediate training in theatre production through intensive study and rehearsal of scenes and plays for public performance. Variable Credit: 1-3 credits. May be repeated for up to 6 credits. Required: Student Petition. Required: Successful audition/interview. Recommended: TA-153.

**TA-280 Theatre/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with a learning experience related to course of study and career goal. Major emphasis will be given to on-the-job experience and training. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

**TA-295 Student Performance Showcase**

1-3 credits, Fall/Winter/Spring

Training in special forms of theatrical presentation through in-class intensive preparation, study, and program development for public presentation, including comedy improvisation, stand-up comedy, and student directed one-act plays. Roles in one-act plays require a successful audition. Other opportunities open to all. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

**TTL****Transportation & Logistics****TTL-101 Introduction to Professional Truck Driving & Logistics**

1-8 credits, Fall/Winter/Spring/Summer

Introduction to logistics and commercial vehicle operation, covering control systems, coupling procedures, cargo handling and pre-trip inspections. Covers regulations and requirements for CDL, speed management, road conditions, and accident scene management. Variable Credit: 1-8 credits. Corequisites: TTL-121.

**TTL-121 Practical Applications in Professional Truck Driving & Logistics**

1-8 credits, Fall/Winter/Spring/Summer

Demonstration of skill development related to safe commercial vehicle operation. In-depth coverage of logistics, business processes and communication skills development. Covers delivery basics, including backing, visual search, shifting, turning, space and speed management. Variable Credit: 1-8 credits. Corequisites: TTL-101.

**TTL-141 Transportation Customer Service Skills**

1-3 credits, Spring

Focuses on building necessary skills for outstanding customer service, including effective listening, conflict resolution, and communication. Identify internal and external customers, learn how to handle potentially unproductive interactions, and create positive experiences for all customers. Variable Credit: 1-3 credits.

**TTL-180 Transportation & Logistics/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience in the Transportation & Logistics field. Supervision and evaluation of the student's job performance will be provided by qualified staff of the college and employer. Variable Credit: 1-6 credits. Required: Student Petition. Corequisites: CWE-281.

**UAS****Uncrewed Aircraft Systems****UAS-201 Drone Operations Basics: FAA Part 107**

3 credits, Not Offered Every Term

This course will prepare students to take the Part 107 Aeronautical Knowledge Test to become a commercial uncrewed aircraft systems (UAS) pilot. It will cover topics such as: rules and regulations, aerodynamics, navigation, airspace and weather. This course will provide hands-on training for drone operations, including system fundamentals, safety procedures, hazard recognition and air crew performance.

**UAS-205 Practical Drone Applications**

2 credits, Not Offered Every Term

This course will provide the opportunity for students to develop and implement a real-world drone project, such as: geographic data collection, aerial photography and videography; real-time aerial observation and other uncrewed aircraft systems (UAS) applications.

**WET****Water & Environmental Technology****WET-010 Wastewater Operations I**

3 credits, Fall

For professional upgrade only. Does not meet the requirements for the college certificate or the associates of science degree. Introduction to the fundamentals of wastewater operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

**WET-011 Waterworks Operations I**

3 credits, Fall

For professional upgrade only. Does not meet the requirements for the certificate or degree. Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection.

**WET-020 Wastewater Operations II**

3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Includes biological sludge treatment. Prerequisites: WET-010.

**WET-021 Waterworks Operations II**

3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping.

**WET-030 Wastewater Operations III**

3 credits, Spring

For professional upgrade only. Does meet the requirements for the certificate or degree. Design, operation, process control and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge handling process. No lab requirement for this course. Prerequisites: WET-020.

**WET-031 Water Treatment**

3 credits, Spring

For professional upgrade only. Does not meet the requirements for the certificate or degree. Design, operation and process control of water treatment plants. Includes water chemistry, related math, coagulation, sedimentation, filtration and disinfection procedures. Review for Oregon Operator certification exams. No lab requirement for this course. Lab includes field trips to local water treatment facilities.

**WET-108 Cross-Connection Control Program Specialist**

3 credits, Fall/Winter/Spring/Summer

Specialized training for those who want to be involved in administering cross-connection control programs. Elements of a cross-connection control program, basic hydraulics, state specific regulations, identifying possible cross-connections and site surveys in order to determine proper type of backflow protection, if needed.

**WET-109 Backflow Assembly Operation and Testing**

4 credits, Fall/Winter/Spring/Summer

Lecture course with lab component that focuses on backflow assembly hydraulics, operations, installation, and testing.

**WET-110 Wastewater Operations I**

3 credits, Fall

Introduction to the fundamentals of wastewater character and operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles. Corequisites: MTH-082A.

**WET-111 Waterworks Operations I**

3 credits, Fall

Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection. Corequisites: MTH-082B.

**WET-112 Computer Applications for Water and Wastewater Operations**

4 credits, Fall

Focuses on direct application of Microsoft Word, PowerPoint, and Excel for producing compliance reports, professional presentations, and data analysis. Emphasis will be put on the use of Excel for statistical analysis of water and wastewater plant data for state and federal compliance. Supervisory control and Data Acquisition (SCADA) will also be covered. Wastewater simulators will be explored and used to design and manipulate unit processes. Corequisites: WET-110 and WET-111.

**WET-120 Wastewater Operations II**

3 credits, Winter

Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems with the associated clarification process will be presented. Prerequisites: WET-110. Corequisites: MTH-082C.

**WET-121 Waterworks Operations II**

3 credits, Winter

An introduction to water distribution, with a focus on water regulations, operator math, water chemistry, and specific water distribution processes. Also examines distribution system design, water mains, hydrants and valves, water pumps, water system supply security, and public relations. Everything you need to know to pass the water distribution grade 1 state certification. Prerequisites: WET-111. Corequisites: MTH-082D.

**WET-122 Water Distribution and Wastewater Collection Systems**

3 credits, Winter

Elementary engineering aspects of water distribution and wastewater collection systems. System components, construction materials, pump station design, maintenance, operations, and other related topics. Prerequisites: WET-110. Corequisites: WET-120.

**WET-123 Environmental Chemistry I**

3 credits, Winter

Theory and applied laboratory techniques for testing water and wastewater. Students will test wastewater for NPDES required tests.

**WET-125 High Purity Water Production I**

3 credits, Fall

Fundamentals of high purity water chemistry, reverse osmosis treatment, ion exchange treatment, electrode ionization treatment, UV, ozonation, degasification and microfiltration as applied to the production of high purity water for the semiconductor, pharmaceutical and electric power generating industries. Corequisites: MTH-082E.

**WET-130 Wastewater Operations III**

4 credits, Spring

Design, operation, process control and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge treatment, and handling processes. Lab includes field trips to local wastewater facilities. Prerequisites: WET-120. Corequisites: WET-130L.

**WET-130L Wastewater Operations III Lab**

0 credits, Spring

The course is devoted to comprehension of the wastewater treatment process via weekly exploration of a wastewater treatment plant. We will tour a treatment plant and then go over the treatment process in lecture. We will emphasize emerging wastewater technologies, (nitrification/denitrification), sludge and bio-solids management, volatile solids reduction through the digestion (aerobic and anaerobic) processes, sludge/solids processing, solids handling, and ultimate waste solids disposal. Fundamental principles of emerging wastewater treatment process, solids handling, including disinfection and dechlorination of wastewater will be emphasized. Prerequisites: WET-110 and WET-120. Corequisites: WET-130.

**WET-131 Water Treatment**

4 credits, Spring

Design, operation and process control of water treatment plants. Includes water chemistry, related math, coagulation, flocculation, sedimentation, filtration and disinfection procedures. Review for Oregon Operator grade 1 certification exams. Lab includes field trips to local water treatment facilities. Prerequisites: WET-121. Corequisites: WET-131L.

**WET-131L Water Treatment Lab**

0 credits, Spring

Lab Course for WET-131. Must be taken concurrently with WET-131. Prerequisites: WET-121. Corequisites: WET-131.

**WET-132 Collection & Distribution Lab**

1 credit, Spring

Field exposure to water distribution systems and wastewater collection systems. Weekly field visits include inspection of cross-connection inspection, distribution valving, reservoirs, water metering/repair, pumping station operations, smoke testing, and CCTV.

**WET-134 Environmental Chemistry II**

3 credits, Spring

Water quality testing, monitoring and reporting. The course includes the theory and application of common water quality tests for surface water, groundwater, and storm water monitoring systems. The course also covers all water quality tests for ensuring correct water treatment processes. Prerequisites: WET-123.

**WET-135 High Purity Water Production II**

4 credits, Winter

A lab course focusing on the operation of equipment and unit processes in the production of high purity water. Emphasis on process equipment sizing and design, process control and troubleshooting. Prerequisites: WET-125 and MTH-082E.

**WET-180 Water & Environmental Projects I**

1-5 credits, Spring

Practical work experience in a municipal industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Variable Credit: 1-5 credits. Corequisites: CWE-281.

**WET-241 Aquatic Microbiology**

4 credits, Fall

A lab course with topics in applied microbiology. Methods to detect coliform group in water and wastewater. Identification of filamentous bacteria in activated sludge, and identification of indicator protozoa in activated sludge. A bacteriological stream survey project is included. Prerequisites: BI-204.

**WET-242 Hydraulics for Water & Wastewater**

3 credits, Fall

Introduction to closed conduit and open channel flow. Includes hydrostatics and dynamics, head-loss, pump characteristics, Bernoulli's and the energy equations, and basic characteristics of water. Prerequisites: WET-122.



**WET-245 Instrumentation & Control**

4 credits, Fall

A lab course introducing methods used to monitor and control treatment processes in wastewater, water and high purity water facilities. Advanced water analysis to include typical monitoring of high purity water treatment. Fundamentals of control loops, control systems and data management.

**WET-280 Water & Environmental Projects II**

5 credits, Fall

Practical work experience in a municipal industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Practical experience in a municipal, public or private wastewater treatment facility of specific activated sludge design. Process loading criteria, data acquisition & trend charting, and relevant sanitary process strategies will be addressed. Prerequisite or Corequisite: CWE-281.

**WLD****Welding Technology****WLD-100 Welder's Print Reading I**

3 credits, Fall/Winter

Provides instruction in reading and interpretation of prints and symbols common in the welding industry. Participants will learn the interpretation and application of basic lines, dimensions, structural shapes, and specifications. Welding symbols and their application to different types of joint configurations will be covered, as well as how to develop basic shop drawings and prints.

**WLD-102 Introduction to Welding**

2 credits, Fall/Winter/Spring

Designed for the beginner and experimental welder. Includes: oxy-acetylene, stick, wire feed and TIG welding, oxy-acetylene and plasma arc cutting.

**WLD-103 Blacksmithing & Traditional Iron Working**

2 credits, Fall/Winter/Spring

This course introduces the student to basic blacksmithing techniques and processes, as well as terminology, steel types, heat treating and tool making. Multiple projects allow the student to practice the varied methods of manual metal forming. No welding experience required.

**WLD-104 Introduction to CNC Plasma Cutting**

2 credits, Not Offered Every Term

Introduces the student to the basics of CNC plasma cutting. Participants will learn set-up and operation procedures for plasma machines and how to operate CNC controller software. Two-dimensional wire frame geometry creation and programming will be used to create projects. This course is recommended for anyone interested in CNC plasma cutting for industry applications or artwork.

**WLD-110 Welder Certification**

4 credits, Fall/Winter/Spring/Summer

This course provides theory and practical instruction to become a certified welder. Students will choose a welding process (flux core arc welding, shielded metal arc welding, or gas tungsten arc welding) for certification. Material needed for practice welding will be provided. Students will take a welding certification exam at the end of the class. May be repeated for up to 12 credits.

**WLD-111 Shielded Metal Arc Welding (Stick)**

2-8 credits, Not Offered Every Term

Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered. Welding codes, standards, and specifications will be reviewed. Variable Credit: 2-8 credits.

**WLD-111A Shielded Metal Arc Welding (Stick)**

4 credits, Not Offered Every Term

The first half of WLD-111 which provides the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet welds in flat and horizontal positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered.

**WLD-111B Shielded Metal Arc Welding (Stick)**

4 credits, Not Offered Every Term

The second half of WLD-111 which provides the opportunity to acquire additional knowledge and skills needed to perform more advanced fillet and groove welds in vertical and overhead positions with the SMAW process. Welding codes, standards, and specifications will be reviewed. Prerequisites: WLD-111A.

**WLD-113 Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)**

1-8 credits, Not Offered Every Term

Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the Gas Metal Arc and Flux Core Arc Welding processes. Oxy-fuel cutting, and air carbon arc cutting and gouging will be covered. Welding codes, standards and specifications will be reviewed. Variable Credit: 1-8 credits.

**WLD-113A Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)**

4 credits, Not Offered Every Term

The first half of WLD-113 which provides the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet welds in flat and horizontal positions with the Gas Metal Arc and Flux Core Arc Welding processes. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered.

**WLD-113B Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)**

4 credits, Not Offered Every Term

The second half of WLD-113 which provides the opportunity to acquire additional knowledge and skills needed to perform more advanced fillet and groove welds in vertical and overhead positions with the Gas Metal Arc and Flux Core Arc Welding processes. Welding codes, standards, and specifications will be reviewed. Prerequisites: WLD-113A.

**WLD-115 Gas Tungsten Arc Welding (GTAW)**

1-8 credits, Not Offered Every Term

Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the Gas Tungsten Arc Welding process. Plasma arc cutting will be covered. Welding codes, standards, and specifications will be reviewed. Variable Credit: 1-8 credits.

**WLD-115A Gas Tungsten Arc Welding (GTAW)**

4 credits, Not Offered Every Term

The first half of WLD-115 which provides the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet welds in flat and horizontal positions with the Gas Tungsten Arc Welding (GTAW) process. Plasma arc cutting will be covered.

**WLD-115B Gas Tungsten Arc Welding (GTAW)**

4 credits, Not Offered Every Term  
The second half of WLD-115 which provides the opportunity to acquire additional knowledge and skills needed to perform more advanced fillet and groove welds in vertical and overhead positions with the Gas Tungsten Arc Welding process. Welding codes, standards, and specifications will be reviewed. Prerequisites: WLD-115A.

**WLD-150 Welding Processes**

4 credits, Fall/Winter/Spring/Summer  
Covers oxy-acetylene welding, brazing, cutting, stick welding, wire feed, oxy-fuel and plasma cutting. Includes: safety, electrical fundamentals, routine maintenance, minor repairs, and terms and definitions.

**WLD-200 Welder's Print Reading II**

3 credits, Not Offered Every Term  
Provides instruction in reading and interpretation of prints and symbols common in welding industry. Participants will learn interpretation and application of blueprint views. Includes basic layout techniques and math review. American Welding Society symbols, International Standards Organization symbols, pipe welding symbols, and inspection symbols are covered. Prerequisites: WLD-100.

**WLD-203 Blacksmithing & Traditional Iron Working II**

2 credits, Fall/Winter/Spring  
This course builds on the WLD-103 course and expands on the process of forged metal work. Instruction includes power hammer use, tooling design, traditional joinery, and intermediate projects. Welding experience helpful, but not required.

**WLD-210 Pipe Welding**

4 credits, Fall/Winter/Spring  
Provides beginning theory and practical instruction in the Shielded Metal Arc Welding (SMAW) process on steel plate and pipe. The specific projects include: stringer beads, fillet and groove welds on plate with root and cover proficiency, pipe cutting using the oxy-fuel process, and groove welds on pipes in all positions. Prerequisites: WLD-111, or WLD-111A and WLD-111B, and WLD-150 or prior experience in SMAW.

**WLD-211 Advanced Shielded Metal Arc Welding**

4 credits, Not Offered Every Term  
This course provides the opportunity for students to acquire the knowledge and skills needed to perform quality fillet and groove welds in all positions using the Shielded Metal Arc Welding (SMAW) process. Advanced welding theory and procedures will also be included. Prerequisites: WLD-111; or WLD-111A and WLD-111B.

**WLD-212 Shielded Metal Arc Welding Pipe Welding**

2-4 credits, Not Offered Every Term  
This class is designed to teach students the fundamentals of open root pipe welding. Theory and practical instruction in open root V groove pipe welding using E6010 and E7018 electrodes will be provided. Oxy-fuel pipe cutting is also included. Variable Credit: 2-4 credits. Required: Student Petition. Prerequisites: WLD-211.

**WLD-213 Advanced Gas Metal Arc Welding/Flux Core Arc Welding**

4 credits, Not Offered Every Term  
This course provides the opportunity for students to acquire the knowledge and skills needed to perform quality fillet and groove welds in all positions using the Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW) processes. Advanced welding theory and procedures will also be included. Prerequisites: WLD-113; or WLD-113A and WLD-113B.

**WLD-215 Advanced Gas Tungsten Arc Welding**

4 credits, Not Offered Every Term  
This course provides the opportunity for students to acquire the knowledge and skills needed to perform quality fillet and groove welds in all positions using the Gas Tungsten Arc Welding (GTAW) process. Advanced welding theory and procedures will also be included. Prerequisites: WLD-115; or WLD-115A and WLD-115B.

**WLD-250 Welding Fabrication I Beginning Project**

4 credits, Not Offered Every Term  
This course consists of lecture and lab and provides instruction in fabrication techniques including blueprint reading, layout, sketching, bills of material, job cost calculations, measuring, fitting, cutting and welding. Students will be assigned beginning fabrication projects. The student will be responsible for all aspects of managing the project to successful completion. Prerequisites: MFG-103 or MFG-111; and WLD-111, WLD-113, or WLD-115.

**WLD-251 Welding Fabrication II Intermediate Project**

4 credits, Not Offered Every Term  
This course consists of lecture and lab. Students will use the skills learned in Fabrication I, such as blueprint reading, layout, sketching, bills of materials, job cost calculations, measuring, fitting, cutting and welding, and apply them to more challenging projects. Students will be assigned intermediate fabrication projects. The student will be responsible for all aspects of managing the project to successful completion. Prerequisites: WLD-250.

**WLD-252 Welding Fabrication III Advanced Project**

4 credits, Not Offered Every Term  
This course consists of lecture and lab. Students will use the skills learned in Fabrication I and II, such as blueprint reading, layout, sketching, bills of materials, job cost calculations, measuring, fitting, cutting and welding, and apply them to advanced projects. Students will be assigned advanced fabrication projects. The student will be responsible for all aspects of managing the project to successful completion. Prerequisites: WLD-251.

**WLD-261 Welding Special Projects**

1-2 credits, Fall/Winter/Spring/Summer  
Allows students to improve their welding skills while working on instructor-approved projects. Variable Credit: 1-2 credits. May be repeated for up to 12 credits.

**WLD-270 Certified Welding Inspector (CWI) Study**

4 credits, Not Offered Every Term

This course provides the instruction and guidance needed for students to apply, study for, and take the AWS CWI exam. A list of study materials, reading assignments, and quizzes will be covered for all three portions of the exam, along with the tools and weld samples used in the practical portion of the exam. Required: Student Petition. Recommended: At least one year of welding experience.

**WLD-280 Welding Technology/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience in the welding trades. Worksite to be determined prior to registering for this class. Skills learned from welding classes will be applied while working at a job site. Goals for this class will be established with the company supervisor, instructor, and student. An online seminar is also required to complete this course. Variable Credit: 1-6 credits. May be repeated for up to 9 credits. Required: Student Petition. Corequisites: CWE-281.

**WR****Writing****WR-101 Communication Skills: Occupational Writing**

3 credits, Fall/Winter/Spring/Summer

Develops basic modes of technical writing, including summaries, process analysis, instructions, and reports. Prerequisites: WRD-098 or placement in WR-121.

**WR-121 English Composition**

4 credits, Fall/Winter/Spring/Summer

Introduces the academic essay. Students learn to use a writing process, from brainstorming to polishing, as they develop original responses to challenging articles and academic essays. The class emphasizes information literacy: how to find and evaluate source material, as well as integrate and cite it. Prerequisites: WRD-098 or placement in WR-121.

**WR-122 English Composition**

4 credits, Fall/Winter/Spring/Summer

This class examines the major principles of argumentation and persuasion including analyzing and writing persuasive essays and visual texts in addition to finding, using, and documenting sources. Prerequisites: WR-121 with a C or better.

**WR-127 Scholarship Essay Writing**

1 credit, Fall/Winter

Introduces scholarship resources and the application process. Examines and applies the concept of 'telling the story of me,' and drafting, revising, and editing a complete scholarship application essay.

**WR-128 Introduction to APA Style & Documentation**

1 credit, Fall/Winter

Introduces American Psychological Association (APA) style and documentation, including document format, in-text citation, and references page. Includes style and documentation for narrative and academic papers. Students will work with provided sources. Recommended for pre-nursing and nursing students, allied health students, and STEM and social science students. Prerequisites: WR-121 with a C or better.

**WR-140 Introduction to Writing Creatively**

4 credits, Not Offered Every Term

Guides students through the discussion and practice of writing creatively in many genres and formats, primarily poetry, fiction, drama and creative non-fiction in a workshop format. May also include screenwriting, digital story telling, film, and performance genres. Recommended: WRD-098 or placement in WR-121.

**WR-148 Self-Publishing: Design and Layout**

1 credit, Spring

This course will offer a hands-on approach to using book design software. The goal of this class is to introduce students to design, layout, and marketing techniques that will enable them to publish their own material.

**WR-149 Introduction to Blogging**

2 credits, Winter/Spring

In this course students will learn the history, terminology, and tools of blogging -- online writing on a specific subject arranged in reverse chronological order. Students will create, maintain, and promote their own blogs on subjects of their choice using the free WordPress platform. They will read and comment on each other's blogs, as well as follow and interact with influential professional blogs. The course will introduce how to self-host and monetize a blog, but doing so is not a requirement.

**WR-222 English Composition**

4 credits, Not Offered Every Year

A course in writing university-level research papers and pursuing lifelong learning through advanced research. Students learn to conduct thorough and creative research using a variety of tools and emphasizing scholarly sources. Prerequisites: WR-122.

**WR-227 Technical Report Writing**

4 credits, Fall/Winter/Spring/Summer

Introduction to report and proposal writing, focusing on organization, form, and style. Emphasis on materials gathered from professional fields such as medicine, nursing, dentistry, government, criminal justice, business, engineering, technology, science, and public relations. The course prepares students to produce clear, informative, and persuasive documents. The purpose and target audience influence choices about how information is presented including writing style, document layout, vocabulary, sentence and paragraph structure, and visuals. The course is grounded in rhetorical theory and focuses on producing usable, user-centered content that is clear, concise and ethical. Prerequisites: WR-121 with a C or better.

**WR-240 Introduction to Creative Writing: Nonfiction**

4 credits, Not Offered Every Term

Techniques of writing and analyzing types of creative nonfiction such as literary journalism, memoirs, nature or science writing, and personal essays. Prerequisites: WRD-098 or placement in WR-121.

**WR-241 Introduction to Creative Writing: Fiction**

4 credits, Fall/Winter  
Introduction to the theory, art and creative practice of fiction writing, with specific emphasis on short prose forms. Prerequisites: WRD-098 or placement in WR-121.

**WR-242 Creating Writing: Poetry**

4 credits, Fall/Winter  
Provides the basic skills for writing and revising poems following contemporary trends in form and content and the critical abilities to read and discuss poems confidently. Prerequisites: WRD-098 or placement in WR-121.

**WR-243 Creative Writing: Playwriting**

4 credits, Not Offered Every Term  
Designed for students who wish to learn the technique of playwriting, including the art of dialogue and the elements of dramatic structure. Recommended: WRD-098 or placement in WR-121.

**WR-244 Advanced Fiction Writing**

4 credits, Spring  
For students with previous writing experience who wish to learn advanced techniques in the theory, art and creative practice of fiction writing. Specific emphasis on the creation and revision of short prose forms, with focused attention on their publication and distribution. Prerequisites: WR-241.

**WR-245 Advanced Poetry Writing**

4 credits, Spring  
For students with writing experience who wish to learn advanced techniques of writing poetry, including developing voice and style and exploring publishing. Prerequisites: WR-242.

**WR-246 Editing & Publishing**

4 credits, Winter/Spring  
For students with an interest in creative writing and/or literary journal design, layout, and publication who wish to develop editing and publishing skills. Includes the production of a literary journal. May be repeated for up to 8 credits. Recommended: WRD-098 or placement in WR-121.

**WR-247 Advanced Playwriting**

4 credits, Not Offered Every Term  
This course will continue to cover the narrative and dramatic techniques begun in Introduction to Playwriting. Students will create and workshop a one-act play, and explore avenues for future production. This course may be repeated for up to 8 credits. Prerequisites: WR-243 or Student Petition.

**WR-248 Bookmaking: Design and Layout**

4 credits, Fall/Winter  
This course covers the design and layout process to produce and publish manuscripts in book form. It includes basic design theory and the step-by-step process for laying out a manuscript using professional design software. Students will also learn how to submit publishable files for print-on-demand. May be repeated for up to 8 credits. Prerequisites: WR-121.

**WR-250 Book Promotion**

4 credits, Spring  
The purpose of this course is to understand the role of marketing in book publishing, and to develop the necessary skills to create promotional materials including marketing plans, tip sheets, press releases, and collateral. Recommended Prerequisite Or Corequisite: WR-121.

**WR-262 Introduction to Screenwriting**

4 credits, Fall/Spring  
Explores the fundamentals of screenplay composition through the use of various writing exercises and workshop techniques. Discussion of dramatic structure and the elements of good storytelling. May be repeated for up to 4 credits. Prerequisites: WRD-098 or placement in WR-121.

**WR-263 Advanced Screenwriting**

4 credits, Not Offered Every Year  
An expansion of fundamental skills initiated in Introduction to Screenwriting. Students will construct a feature-length screenplay, further develop their critical response skills through peer editing and review, and seek out options for production of their work. May be repeated for up to 8 credits. Prerequisites: WR-262 or Student Petition. Recommended: WRD-098 or placement in WR-121.

**WR-265 Digital Storytelling**

4 credits, Winter  
Digital Storytelling is a contemporary expression of the ancient art of storytelling. In this class students will write and create unique digital first person narratives using cloud-based editing tools, photographic and film images, music, and voice. Students will further become active participants in both local and global communities of storytellers. Prerequisites: WR-121.

**WR-268 Nature Writing**

4 credits, Not Offered Every Term  
Explores topics having to do with nature and the environment. Using a workshop format, students will develop the technique of nature writing, focusing on literary journalism, memoir, personal essay, and poetry. Prerequisites: WRD-098 or placement in WR-121.

**WR-270 Food Writing**

4 credits, Fall  
Learn to write uniquely and powerfully about food, from reviews to memoir and personal narrative. Bring the pen to the plate and vice versa, enriching your appreciation for sustenance and sentences at the same time. Recommended: WRD-098 or placement in WR-121.

**WRD****Writing-Reading Skills****WRD-080 Reading/Writing Prep 2**

4 credits, Fall/Winter/Spring  
This is the second foundational course for developing reading and writing skills. Students will develop secondary reading and writing skills by increasing habits of mind and building additional strategies to improve skills. Students will read from a broad range of texts, including introductory academic and popular literary texts, and write in an organized, structured manner that demonstrates attention to purpose, context and thought. May be repeated for up to 12 credits.

**WRD-090 Introductory College Reading & Writing 1**

5 credits, Fall/Winter/Spring/Summer  
This course is the foundation for college-level reading and writing. Students will develop vocabulary skills and apply reading strategies to fiction and non-fiction texts to gain information for various purposes. Writing processes will be introduced and improved to create a simple academic text. Prerequisites: Placement in WRD-090.

**WRD-098 Introductory Reading & Writing 2: College Preparation**

4 credits, Fall/Winter/Spring/Summer  
This course builds on the basic reading and writing skills covered in WRD-090 and prepares students to be successful in WR-121, college-transfer-level composition. Students will read shorter college-level texts and create short essays responding to them. Topics include how to follow a writing process, perform basic research, work in a writing group, and reflect on one's own learning. Prerequisites: WRD-090 or placement in WRD-098.

**WS****Women's Studies****WS-101 Introduction to Women's Studies**

4 credits, Fall/Winter/Spring/Summer  
Examines the history of the representation of women, the history of US feminism and the development of Women's Studies as an academic discipline. Critically explores social issues relevant to women's lives, including gender-expression, marginalization, reproduction, sexuality, economic status and the experience of violence. Recommended: WRD-098 or placement in WR-121.

**XATH****Workshop: Theatre Arts****XATH-0001 Plays & Rehearsals**

0 credits, Fall/Winter/Spring/Summer  
Training in theatre production through intensive study and rehearsal of scenes and plays for public performance.

**XATH-0002 Stagecraft**

0 credits, Fall/Winter/Spring/Summer  
Training in special forms of theatrical presentation through in-class intensive preparation, study and program development for public presentation to the community.

**XCIV****Workshop: Citizen Preparation****XCIV-0001 Citizenship Preparation**

0 credits, Fall/Winter/Spring/Summer  
Prepares students to pass the oral exam for U.S. citizenship. Students study U.S. history, government, citizens' rights and responsibilities, and U.S. symbols independently through a self-paced, online distance learning course, and periodic meetings with the Volunteer Tutor Coordinator, taking quizzes after completing separate modules.

**XMFG****Workshop: Manufacturing****XMFG-C017 Introduction to Mastercam**

1.5 CEU, Fall/Winter/Spring/Summer  
This course teaches the basic understanding of Mastercam and focuses on basic knowledge needed to use Mastercam. Students will use the software to generate basic parts for manufacturing. Topics covered include model creation, process verification, and relevant tool path strategies.

**XWET****Workshop: Water & Environmental Technology****XWET-C001 1-Day Cross Connection Specialist Update**

0.6 CEUS, Not Offered Every Term  
Update on code information or any changes in the program.

**XWET-C002 1-Day Tester Renewal**

0.6 CEUS, Not Offered Every Term  
Update on OARs and hands on testing to recertify student for backflow assembly certification through the State of Oregon.

**XWET-C003 2-Day Tester Retrain/Renewal**

1.2 CEU, Not Offered Every Term  
Review of backflow prevention assemblies used for water/wastewater system cross connection control. Review will include overview of hydraulics and degree of hazards, proper backflow installation procedures, and approved testing/troubleshooting procedures. Students will learn to identify common, actual, and potential cross connection hazards; students will be introduced to the basic requirements for carrying out a cross connection program. Upon successful hands on and written exam completion, students will be issued certificate of completion by OBT/CCC and transcribed for appropriate number of CEUs. Students will be able to apply to Oregon Health Department for recertification by that agency.

**XWET-C004 4-Day Cross Connection Specialist Course**

3.2 CEU, Not Offered Every Term  
Designed to provide information to individuals involved in the protection of public water systems from contamination due to cross connections. This course should be of special interest to cross connection control specialists, plumbing inspectors, waterworks managers, and backflow device testers.

**XWET-C005 5-Day Backflow Tester Course**

4.0 CEU, Not Offered Every Term  
Presentation of backflow prevention assemblies used for water/wastewater system cross connection control. Class will include overview of hydraulics and degree of hazards, proper backflow installation procedures, and approved testing/troubleshooting procedures. Students will learn to identify common, actual, and potential cross connection hazards; students will be introduced to the basic requirements for carrying out a cross connection program. Students will be able to apply to Oregon Health Authority for Certification by that agency.

**XWET-C007 Water Environment School**

2.3 CEU, Not Offered Every Term  
Offerings include: Management & Supervision, Basics, Health & Safety, Technology, Operations, Distribution & Maintenance, Lab, Biosolids, Source Control.

**XWET-C008 Waterworks School**

2.0 CEU, Not Offered Every Term

Offerings include: Management and Supervision, Water Quality and Treatment, Distribution and Maintenance, Waterworks Basics, Customer Service and Safety.

**XWET-C011 Aquatic Microbiology**

1.4 CEU, Not Offered Every Term

Workshop covering microscope use and slide making, basic bacterial shapes, aseptic techniques, Gram and Neisser staining and slide making, bacterial filamentous organism id, common protozoa and protozoa analysis, wastewater plant microbiological characteristics, operation based on plant microbiology, microbiology of aeration basic, influent and effluent.

**XWET-C170 Math for Wastewater Operators**

0.4 CEUS, Not Offered Every Term

Math skill building and preparation for problem solving in the wastewater industry.

**XWLD****Workshop: Welding****XWLD-0001 American Welding Society (WLD)****Certification 1 Plate Test**

0 credits, Fall/Winter/Spring/Summer  
Welder certification in accordance with AWS D1.1 for one position for students enrolled in any CCC welding course.

**XWLD-0002 American Welding Society****Certification 2 Plate Or 1 Pipe Test**

0 credits, Fall/Winter/Spring/Summer  
Welder certification in any two positions, in accordance with AWS D1.1 for students enrolled in any CCC welding course.

**XWLD-0003 American Welding Society****Certification Retake Test**

0 credits, Fall/Winter/Spring/Summer  
Welder certification on retest in any position, in accordance with AWS D1.1 for students enrolled in any CCC welding course. Required: Student Petition.

**Z****Zoology****Z-201 General Zoology**

4 credits, Fall

A lab course offering cellular and molecular basis of animal life including genetics, embryology, evolution, systematics, and protozoan diversity. Prerequisites: MTH-095 or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

**Z-202 General Zoology**

4 credits, Winter

A lab course covering the maintenance of the cellular, tissue, & organ levels of invertebrates, evolution of animal systems and the diversity of the invertebrate animal phyla. Prerequisites: MTH-095 with a C or better or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

**Z-203 General Zoology**

4 credits, Spring

A lab course covering diversity of the more complex invertebrate and vertebrate animal phyla. Includes animal anatomy/physiology, animal behavior, distribution, ecology and conservation. Prerequisites: MTH-095 with a C or better or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

