

ODE CAREER LEARNING AREA  
**Agriculture, Food and Natural Resources Systems**

- 29 *Horticulture AAS Degree*
  - *Horticulture Certificate*
  - *Irrigation Technician Career Pathway Certificate*
  - *Plant Health Care Career Pathway Certificate*
- 31 *Landscape AAS Degree*
  - *Landscape Practices Career Pathway Certificate*
- 33 *Water & Environmental Technology AAS Degree*
  - *Water & Environmental Technology Certificate*
  - *High Purity Water Certificate*

**Horticulture**

▲ *Associate of Applied Science Degree*

■ *Certificate*

In keeping with the college mission, the Horticulture Department provides quality education and training for industry and community members. Course offerings in greenhouse, landscape, environmental education, and nursery management integrate technical knowledge, critical thinking, practical skills, and environmental stewardship.

Horticulture is a hands-on, broad-based curriculum where students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, while training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students cultivate CCC's award-winning, All-American Selections Garden and landscape areas on the CCC campus.

CCC's Horticulture and Landscape programs are the only programs accredited in Oregon by the Professional Land-care Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscaping standards.

Students may begin this program any term. Degree options include a one-year certificate program or a two-year associate's degree program. Following the course offerings in the order listed is encouraged unless otherwise advised by the horticulture advisor. The certificate and associate's degree programs include a cooperative work experience class which requires working with a horticultural employer.

**PROGRAM OUTCOMES**

Program outcomes should include the skills necessary for entry-level employment into tree, shrub, or perennial plant nurseries, greenhouse work, plant propagation, landscape design, landscape installation and maintenance, maintenance of interior plants, landscape supply and equipment sales.

Students are eligible to sit for the Oregon Certified Nursery Professional Exam. Students completing the Horticulture Associate of Applied Science (AAS) degree with a 2.5 GPA or higher, are eligible to take the Oregon Landscape Contractors License Exam.

**CAREERS**

Career opportunities include nursery and garden center manager and associate, nursery production, greenhouse grower, organic food production, supply and equipment sales, landscape design, installation and maintenance worker, parks department personnel and groundskeeper.

For information contact Elizabeth Howley, horticulture advisor, ext. 2389 or [ehowley@clackamas.edu](mailto:ehowley@clackamas.edu)

**OSU TRANSFER AGREEMENT**

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Horticulture students planning to continue their studies at a four-year college should consult the advisor. The horticulture advisor will work with individual students in order to obtain the most recent transfer information.

**OSU TRANSFER COURSES**

COURSE		CREDITS
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	3
HOR-227	Plant Identification/Winter	3
HOR-228	Plant Identification/Spring	3

**HORTICULTURE CERTIFICATE**

FALL TERM		CREDITS
CS-091	Computers for New Users II	2
HOR-111	Horticulture Practicum/Fall	6
HOR-122	Greenhouse Crops-Potted Plants	
or HOR-123	Landscape Maintenance	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	3-5
WINTER TERM		
HOR-130	Plant Propagation Theory	
or HOR-131	Tree & Shrub Pruning/Winter	3
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	3

*Continued*

## ODE CAREER LEARNING AREA

*Agriculture, Food and Natural Resources Systems**Horticulture continued...***SPRING TERM**

HOR-140	Soils & Fertilizers	3
HOR-142	Greenhouse Crops-Bedding Plants or HOR-145 Turf Installation & Maintenance	3
HOR-143	Horticulture Practicum/Spring	6
HOR-228	Plant Identification/Spring	3
SP-100	Basic Speech Communication	3

**SUMMER TERM**

HOR-280	Horticulture/CWE	3
WR-101	Communication Skills: Occupational Writing or WR-121 English Composition	3-4
<i>Minimum credits required for certificate</i>		58-61

**HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE:  
1ST YEAR****FALL TERM**

		CREDITS
CS-091	Computers for New Users II	2
HOR-111	Horticulture Practicum/Fall	6
HOR-122	Greenhouse Crops-Potted Plants or HOR-123 Landscape Maintenance	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I or MTH-065 Algebra II (or higher level of math)	3-5

**WINTER TERM**

HOR-130	Plant Propagation Theory or HOR-131 Tree & Shrub Pruning/Winter	3
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	3

**SPRING TERM**

HOR-140	Soils & Fertilizers	3
HOR-142	Greenhouse Crops-Bedding Plants or HOR-145 Turf Installation & Maintenance	3
HOR-143	Horticulture Practicum/Spring	6
HOR-228	Plant Identification/Spring	3

**SUMMER TERM**

HOR-281	Horticulture/CWE or HOR-280 Horticulture/CWE or HOR-282 Horticulture/CWE	6
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**HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE:  
2ND YEAR****FALL TERM**

		CREDITS
SPN-101	First Year Spanish	4
WR-101	Communication Skills: Occupational Writing or WR-121 English Composition	3-4
— —	Horticulture program electives	6

**WINTER TERM**

HOR-230	Equipment Operation & Maintenance	3
— —	Select one: BA-101, BA-211, BA-223, HOR-238	3-4
— —	Horticulture program electives	6

**SPRING TERM**

HE-252	First Aid/CPR	3
SP-100	Basic Speech Communication	3
— —	Horticulture program electives	6
<i>Minimum credits required for degree</i>		92-96

**HORTICULTURE PROGRAM ELECTIVES****COURSE**

		CREDITS
HOR-114	Garden Design	1
HOR-122	Greenhouse Crops—Potted Plants	3
HOR-123	Landscape Maintenance	3
HOR-130	Plant Propagation Theory	3
HOR-131	Tree & Shrub Pruning/Winter	3
HOR-134	Herb Growing & Gardening	1
HOR-142	Greenhouse Crops—Bedding Plants	3
HOR-144	Basic Pruning	1
HOR-145	Turf Installation & Maintenance	3
HOR-146	Fruit Tree Short Course	1
HOR-147	Marketing Water Efficient Landscaping	1
HOR-211	Native Plant Identification	1
HOR-212	Flower Arranger's Garden/Fall	3
HOR-213	Computer-Aided Landscape Design	3
HOR-215	Herbaceous Perennial Plants	3
HOR-216	Integrated Pest Management	2
HOR-220	Plant Propagation/Fall	3
HOR-223	Flower Arranging	3
HOR-224	Landscape Installation	3
HOR-225	Principles of Arboriculture	3
HOR-229	Basic Landscape Design	3
HOR-231	Irrigation & Drainage Design	3
HOR-232	Commercial Floral Design	3
HOR-233	Plant Propagation/Winter	3
HOR-234	Intermediate Landscape Design	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
HOR-237	Disease Identification	2
HOR-238	Landscape Business Operations	3
HOR-239	Tree Climber Training	2
HOR-240	Irrigation & Drainage Practices	3
HOR-241	Nursery Management	3
HOR-242	Plant Propagation/Spring	3
HOR-243	Tree & Shrub Pruning/Spring	3
HOR-244	Environmental Landscape Design	3
HOR-245	Advanced Landscape Design	3
HOR-246	Organic Gardening	3
HOR-247	Hardscape Installation	3
HOR-248	Flower Arranger's Garden/Spring	3
HOR-250	Western Herbs	1
HOR-251	Herbal Products	1
HOR-252	Kitchen Herbs	1
HOR-280	Horticulture/CWE	3
HOR-281	Horticulture/CWE	6
HOR-282	Horticulture/CWE	3

## Irrigation Technician

### ● Career Pathway Certificate

*Pending State Approval*

The Irrigation Technician program provides instruction for design, installation, repair, upgrade, maintenance, monitoring and programming of irrigation systems for landscapes, nurseries, golf courses, parks or agriculture. This pathway certificate is associated with the Horticulture Certificate and AAS degree programs.

#### PROGRAM OUTCOMES

Successful completion of this program should provide students with the necessary skills to design, install, maintain, troubleshoot, repair and program irrigation systems.

#### CAREERS

Career opportunities may include working as an Irrigation Technician in nurseries, greenhouses, parks, golf courses, landscapes or production agriculture.

For information contact Elizabeth Howley, horticulture advisor, ext. 2389 or ehowley@clackamas.edu

#### IRRIGATION TECHNICIAN CAREER PATHWAY CERTIFICATE

##### WINTER TERM

HOR-231	Irrigation/Drainage Design	3
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
or HOR-282	Horticulture/CWE	6

##### SPRING TERM

HOR-140	Soils & Fertilizers	3
HOR-147	Marketing Water Efficient Landscaping	1
HOR-240	Irrigation/Drainage Practices	3

*Minimum credits required for certificate* 16

## Plant Health Care

### ● Career Pathway Certificate

*Pending State Approval*

The Plant Health Care program provides instruction for monitoring and identifying pests, selecting and utilizing appropriate control measures and evaluating their effectiveness. Coursework is offered through evening classes and on-the-job training. This pathway certificate is associated with the Horticulture Certificate and AAS programs.

#### PROGRAM OUTCOMES

Successful completion of this program should provide students with the skills necessary to work in the green industry as Plant Health Care Technician or Pest Control Specialist. The program also provides the knowledge to pass the Oregon State Department of Agriculture Pesticide Applicator licensing exams.

#### CAREERS

Career opportunities may include working as a Plant Health Care Technician or Pest Control Specialist in nurseries, greenhouses, parks, golf courses, landscape management, or production agriculture.

For information contact Elizabeth Howley, horticulture advisor, ext. 2389 or ehowley@clackamas.edu

#### PLANT HEALTH CARE CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-216	Integrated Pest Management	2
HOR-237	Disease Identification	2
SPRING TERM		
HOR-132	Pesticide Selection & Use	3
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
or HOR-282	Horticulture/CWE	6
<i>Minimum credits required for certificate</i>		17

## Landscape

### ▲ Associate of Applied Science Degree

The Landscape certificate and degree programs are designed for students whose concentration is within the landscape career path. Students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, arboretum and turf management areas, including training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students also cultivate CCC's award-winning, All-American Selections Garden and landscape areas on the CCC campus.

CCC's Landscape and Horticulture programs are the only programs accredited in Oregon by the Professional Landcare Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscaping standards, to network with landscape industry professionals, to extend their knowledge about landscape standards and practices and to attend the National PLANET Student Career Days each year.

Students may begin this program any term. Following the course offerings in the order listed is encouraged unless otherwise advised by the Horticulture advisor. The program includes a cooperative work experience class and working with a horticultural employer.

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## ODE CAREER LEARNING AREA

*Agriculture, Food and Natural Resources Systems*

*Landscape continued...*

**PROGRAM OUTCOMES**

Program outcomes should include the skills necessary for entry-level employment in landscape design, landscape installation, maintenance of landscapes, tree care industry and supply/equipment sales.

Students completing the Landscape Associate of Applied Science (AAS) degree with a 2.5 GPA or higher are eligible to take the Oregon Landscape Contractors License Exam.

**CAREERS**

Career opportunities include equipment sales, landscape design, installation and maintenance contractor, arborist, turf management, estate gardening, parks department personnel and groundskeepers.

For information contact Elizabeth Howley, Horticulture advisor, ext. 2389 or ehowley@clackamas.edu

**OSU TRANSFER AGREEMENT**

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Landscape students planning to continue their studies at a four-year college should consult the advisor. The Horticulture advisor will work with individual students in order to obtain the most recent transfer information.

**LANDSCAPE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	6
HOR-123	Landscape Maintenance	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	3-5
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
HOR-131	Tree & Shrub Pruning/Winter	3
HOR-133	Horticulture Practicum/Winter	6
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	3
— —	Human Relations requirement (see page 21)	3-4
SPRING TERM		
HOR-132	Pesticide Selection & Use	3
HOR-140	Soils & Fertilizers	3
HOR-143	Horticulture Practicum/Spring	6
HOR-145	Turf Installation & Maintenance	3
HOR-228	Plant Identification/Spring	3
SUMMER TERM		
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
or HOR-282	Horticulture/CWE	6

**LANDSCAPE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
HOR-224	Landscape Installation	
or HOR-225	Principles of Arboriculture	3
HOR-229	Basic Landscape Design	3
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
SPN-101	First Year Spanish	4
WINTER TERM		
HOR-230	Equipment Operation & Maintenance	3
HOR-231	Irrigation & Drainage Design	3
HOR-234	Intermediate Landscape Design	
or HOR-213	Computer Aided Landscape Design	3
HOR-237	Disease Identification	
or HOR-239	Tree Climber Training	2
HOR-238	Landscape Business Operations	3
SPRING TERM		
HE-252	First Aid/CPR	3
HOR-147	Marketing Water Efficient Landscaping	1
HOR-240	Irrigation & Drainage Practices	3
HOR-243	Tree & Shrub Pruning	
or HOR-245	Advanced Landscape Design	3
HOR-247	Hardscape Installation	3
<i>Minimum credits required for degree</i>		98-102

## Landscape Practices

**■ Certificate**

The Landscape Practices certificate is designed for students whose concentration is within the landscape career path. Students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, arboretum and turf management areas, including training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students also cultivate CCC's award winning, All-American Selections Garden and landscape areas on the CCC campus.

CCC's Landscape and Horticulture programs are the only programs accredited in Oregon by the Professional Land-care Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscape industry professionals, to extend their knowledge about landscape standards and practices and to attend the National PLANET Student Career Days each year.

Students may begin this program any term. Following the course offerings in the order listed is encouraged unless otherwise advised by the Horticulture advisor. The program includes a cooperative work experience class and working with a horticultural employer.

**PROGRAM OUTCOMES**

Program outcomes should include the skills necessary for entry-level employment in landscape design, landscape installation, maintenance of landscapes, tree care industry and supply/equipment sales.

**CAREERS**

Career opportunities include equipment sales, landscape design, installation and maintenance contractor, arborist, turf management, estate gardening, parks department personnel and groundskeepers.

For information contact Elizabeth Howley, Horticulture advisor, ext. 2389 or ehowley@clackamas.edu

**OSU TRANSFER AGREEMENT**

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Landscape students planning to continue their studies at a four-year college should consult the advisor. The Horticulture advisor will work with individual students in order to obtain the most recent transfer information.

**LANDSCAPE PRACTICES CERTIFICATE**

<b>FALL TERM</b>	<b>CREDITS</b>
HOR-224 Landscape Installation	3
HOR-225 Principles of Arboriculture or HOR-226 Plant Identification/Fall	3
HOR-229 Basic Landscape Design or HOR-123 Landscape Maintenance	3
HOR-235 Weed Identification	2
HOR-236 Insect Identification	2
<b>WINTER TERM</b>	
HOR-132 Pesticide Selection & Use	3
HOR-231 Irrigation & Drainage Design	3
HOR-234 Intermediate Landscape Design or HOR-230 Equipment Operation & Maintenance	3
HOR-238 Landscape Business Operations	3
HOR-239 Tree Climber Training or HOR-227 Plant Identification/Winter	2-3
<b>SPRING TERM</b>	
HOR-140 Soils & Fertilizers	3
HOR-145 Turf Installation & Maintenance	3
HOR-243 Tree & Shrub Pruning/Spring	3
HOR-247 Hardscape Installation or HOR-228 Plant Identification/Spring	3
HOR-280 Horticulture/CWE	3
<i>Minimum credits required for certificate</i>	42-43

## Water & Environmental Technology

▲ *Associate of Applied Science Degree*

■ *Certificate*

\* *Professional Upgrade*

The Water & Environmental Technology program provides career technical classes combined with field experience. Classes are offered in day/evening combinations and have enrollment limits to enhance instructional quality and job placement.

Course work emphasizes fundamental aspects of drinking water distribution, drinking water treatment, wastewater collection and wastewater treatment. Course work includes 240 hours of industry cooperative work experience, laboratory methods in environmental chemistry, aquatic microbiology and preparation for the provisional operator certification exams.

**PROGRAM PREREQUISITE**

MTH-065 Algebra II must be completed prior to fall term entry.

**PROGRAM OUTCOMES**

Program outcomes should include the skills necessary for entry-level employment in a variety of water-management industries; cities, counties and state agencies; and businesses, including wastewater treatment plants, drinking water treatment plants, environmental laboratories, source control programs, engineering firms, surface water management agencies, environmental agencies and organizations.

**CAREERS**

Career opportunities may include water and/or liquid waste treatment plant and system operator, environmental science technician and environmental engineering technician. Careers may also include environmental lab technician, source control technician, surface water specialist and environmental regulator.

For information contact John Lewis, ext. 2206 or jlewis@clackamas.edu

**WATER & ENVIRONMENTAL TECHNOLOGY CERTIFICATE**

<b>FALL TERM</b>	<b>CREDITS</b>
CH-104 Introductory Chemistry	
or CH-221 General Chemistry	5
MTH-082A Wastewater Math I	1
MTH-082B Waterworks Math I	1
WQT-110 Wastewater Operations I	3
WQT-111 Waterworks Operations I	3
WR-101 Communication Skills: Occupational Writing or WR-121 English Composition	3-4
— — Human Relations requirement (see page 21) (Recommended: PSY-101)	3

*Continued*



## ODE CAREER LEARNING AREA

*Agriculture, Food and Natural Resources Systems**Water & Environmental Technology continued...***WINTER TERM**

BI-204	Elementary Microbiology	4
MTH-082C	Wastewater Math II	1
MTH-082D	Waterworks Math II	1
WQT-120	Wastewater Operations II	3
WQT-121	Waterworks Operations II	3
WQT-122	Water Distribution/Wastewater Collection Systems	3
WQT-123	Environmental Chemistry I	3

**SPRING TERM**

CS-120	Survey of Computing	4
WQT-130	Wastewater Operations III	4
WQT-131	Water Treatment	4
WQT-132	Collection & Distribution Lab	1
WQT-134	Environmental Chemistry II	2
WQT-180	Water & Environmental Projects I	5

*Minimum credits required for certificate* 57-58**WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

Complete certificate program.

**WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
WQT-241	Aquatic Microbiology	4
WQT-242	Hydraulics/Water & Wastewater	3
WQT-245	Instrumentation & Control	4
WQT-280	Water & Environmental Projects II	5

**WINTER TERM**

MTH-095	Algebra III	
or MTH-111	College Algebra	4-5
— —	Geography elective (Recommended: GEO-130)	4
— —	Speech elective (Recommended: SP-111)	3-4

**SPRING TERM**

CS-121	Computer Applications	3
HE-252	First Aid/CPR	3
— —	General elective (any college-level course)	3-4

*Minimum credits required for degree* 93-97**WATER & ENVIRONMENTAL TECHNOLOGY SUGGESTED GENERAL ELECTIVES**

<b>COURSE</b>		<b>CREDITS</b>
BA-101	Introduction to Business	4
PS-203	U.S. Government: State & Local Institutions	4
PSY-240	Interpersonal Awareness & Growth	4
SOC-206	Institutions & Social Change	4
SP-111	Public Speaking	4

**PROFESSIONAL UPGRADE COURSES**

The following courses are designed to upgrade professional skills and in some cases assist in preparation for state certification examinations.

**COURSE**

<b>COURSE</b>		<b>CEU/CREDITS</b>
WQT-009	Certification Review/Wastewater Operators	(CEU)
WQT-009	Certification Review/Waterworks Operators	(CEU)
WQT-009	Cross Connect. Backflow Assembly Tester	(4.0 CEU)
WQT-009	Cross Connection Specialist Course	(3.2 CEU)
WQT-009	Equipment Maintenance & Repair	(CEU)
WQT-009	Pretreatment	(CEU)
WQT-009	Water & Wastewater Short Schools	(2.1 & 2.3 CEU)
WQT-010	Wastewater Operations I	3 credits
WQT-011	Waterworks Operations I	3 credits
WQT-020	Wastewater Operations II	3 credits
WQT-021	Waterworks Operations II	3 credits
WQT-030	Wastewater Operation III	3 credits
WQT-031	Water Treatment	3 credits

## High Purity Water

**■ Certificate****\* Professional Upgrade**

A less than one-year program. The Water/High Purity Production certificate program provides classes and hands-on experience with advanced water treatment methods used in the high-tech industry. The certificate program has been developed in cooperation with Intel Corporation. Based on student demand WQT-125 and WQT-135 may be offered bi-annually.

**PROGRAM PREREQUISITE**

MTH-065 Algebra II must be completed prior to fall term entry.

**PROGRAM OUTCOMES**

Program outcomes for the Water/High Purity Production Certificate should include skills for entry-level employment in the water production technology field of the high-tech industry.

**CAREERS**

Career opportunities may include high-purity lab technician and high-purity production technician.

For information contact John Lewis, ext. 2206 or [jlewis@clackamas.edu](mailto:jlewis@clackamas.edu)

**HIGH PURITY WATER CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
WQT-245	Instrumentation & Control	4

**WINTER TERM**

MTH-082E	Math for High Purity Water	1
WQT-125	High Purity Water Production I	3

**SPRING TERM**

WQT-135	High Purity Water Production II	4
WQT-180	Water & Environmental Projects I	5

*Minimum credits required for certificate* 17

ODE CAREER LEARNING AREA  
**Arts, Information and Communications**

- 35 *Computer Support Specialist AAS Degree*
  - *Computer Support Specialist Certificate*
- 36 *Digital Multimedia Communications AAS Degree*
- 38 *Electronic Publishing Certificate*
- 39 *Music Technology Certificate*
- 40 *Web Design & Development Specialist AAS Degree*
  - *Web Design Specialist Certificate*

**Computer Support Specialist**

▲ *Associate of Applied Science Degree*

■ *Certificate*

The Computer Support Specialist program prepares students for technical support positions. Students may earn either a one-year certificate or a two-year Associate of Applied Science degree. The course work emphasizes development of analytical and problem-solving skills. Cooperative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

**PROGRAM PREREQUISITES**

Prerequisites for first term classes include completed course work for CS-120 Survey of Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II or placement in CS-121 Computer Applications, WR-121 English Composition, and MTH-095 Algebra III. This program is an open program, meaning that students may take any class in the program for which they have completed the prerequisite. Note: Placement at a level of math higher than MTH-092 does not satisfy the MTH-092 requirement.

**PROGRAM OUTCOMES**

Program outcomes should include entry-level skills for employment in technical positions using and supporting computer software, including operating systems, web development, spreadsheets, databases and programming software.

**CAREERS**

Career opportunities may include web designer, database specialist, software trainer, software installation and maintenance engineer, computer applications specialist, client support representative, customer service engineer, help desk technician or software consultant.

For information contact Len Eaton, ext. 2751 or [lene@clackamas.edu](mailto:lene@clackamas.edu)

**COMPUTER SUPPORT SPECIALIST CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-121	Computer Applications	3
CS-140	Operating Systems I	4
CS-150	Computer Tech Orientation	2
CS-225	Computer End-User Support	3
MTH-092	Math for Computer Technicians	4
<b>WINTER TERM</b>		
CS-125H	HTML & Web Site Design	3
CS-135W	Advanced Word Processing	3
CS-179	Data Communications Concepts	3
CS-227	PC Hardware & Repair I	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
<b>SPRING TERM</b>		
BA-101	Introduction to Business	
or BA-103	Business Strategies for Computer Consultants	3-4
CS-135I	Advanced Web Design	3
CS-135S	Advanced Spreadsheet	3
CS-280	Computer Science/CWE	3
— —	Human Relations requirement (see page 21)	
	(Recommended: BA-285 or PSY-101 )	3-4
<i>Minimum credits required for certificate:</i>		47-50

**COMPUTER SUPPORT SPECIALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-121	Computer Applications	3
CS-140	Operating Systems I	4
CS-150	Computer Tech Orientation	2
CS-225	Computer End-User Support	3
MTH-092	Math for Computer Technicians	4
<b>WINTER TERM</b>		
CS-125H	HTML & Web Site Design	3
CS-135W	Advanced Word Processing	3
CS-179	Data Communications Concepts	3
CS-240W	Operating Systems II: Windows	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
<b>SPRING TERM</b>		
ART-225	Computer Graphics I	3
CS-135I	Advanced Web Design	3
CS-133VB	Visual Basic.NET I	3
CS-140U	Operating Systems I: Linux/UNIX	3
CS-280	Computer Science/CWE	3

**COMPUTER SUPPORT SPECIALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-101	Introduction to Business	
or BA-103	Business Strategies for Computer Consultants	3-4
CS-133S	Web Application Development I	3
CS-135DB	Advanced Database	3
— —	Human Relations requirement (see page 21)	
	(Recommended: BA-285 or PSY-101)	3-4
— —	Focus Area	4-6

*Continued*

ODE CAREER LEARNING AREA  
*Arts, Information and Communications*

*Computer Support Specialist continued...*

**WINTER TERM**

CS-195	Multimedia for the Web	3
CS-227	PC Hardware & Repair I	4
CS-275	Database Design	3
— —	PE/Health requirement (see page 21)	1
— —	Focus Area	4-6

**SPRING TERM**

CS-133VA	Visual Basic for Applications	3
CS-135S	Advanced Spreadsheet	3
CS-280	Computer Science/CWE	6
— —	Focus Area	4-6

*Minimum credits required for degree* 93-103

**ADDITIONAL COURSES FROM FOCUS AREA**

Complete all courses from one of the following Focus Areas

**APPLICATION SUPPORT**

COURSE		CREDITS
ART-226	Computer Graphics II	3
BT-220I or BT-177	Desktop Publishing I: InDesign Microsoft Project	3
CS-289I	Web Server Administration: Internet Information Server	3
— —	Computer Support Specialist program elective	3

**WEB/DATABASE PROGRAMMING**

COURSE		CREDITS
CS-233S	Web Application Development II	3
CS-234S	Web Application Development III	3
CS-289I	Web Server Administration: Internet Information Server	3
CS-297W	Website Capstone	3

**ACCOUNTING**

COURSE		CREDITS
BA-211	Financial Accounting I	4
BA-212	Financial Accounting II	4
BA-213	Decision Making with Accounting Information	4

**PROGRAMMING**

COURSE		CREDITS
CS-161	Computer Science I	4
CS-162	Computer Science II	4
CS-260	Data Structures	4

**COMPUTER SUPPORT SPECIALIST PROGRAM ELECTIVES**

Complete 3-4 credits from the following: Any computer science course not already listed in the program numbered 125 or above, except for CS-178. Note: Student may not take more than 6 credits of CWE in any one term.

**Digital Multimedia Communications****▲ Associate of Applied Science Degree**

*Formerly Integrated Media Studies.* The Digital Multimedia Communications (DMC) degree is designed to successfully prepare students for careers in the expanding fields of digital media productions and communications.

**PROGRAM OUTCOMES**

Upon successful completion of the Digital Multimedia Communications degree at Clackamas, students are prepared for a variety of entry level positions in various media fields. Students attain knowledge and learn skills to seek careers in creative and support professions within such media industries as film and video, writing for media, graphic design, production, broadcast journalism, web design, and music and sound production. Students will also receive initial preparation to transfer to advanced degrees in their fields of study.

**CAREERS**

Some of the careers available in media include: production designer, art department coordinator, camera operator, writer (general, film and documentary), editor, visual effects production, multimedia producer, sound mixer and recordist, boom operator, post production sound design, duplication, music composer, looping and foley, mobile location recording, voice-over work, audio for interactive multimedia, steadicam operator, assistant editor, weblog contributor, broadcast journalist, podcast writer and production, script supervisor and continuity, videographer, production assistant, graphic artist, photographer (still), location assistant, storyboard artist, art assistant, web designer, electronic news gatherer, web radio program editor, live sound engineer, broadcast reporter and other emerging opportunities.

For more information contact the Humanities division office, ext. 2333.

**DIGITAL MULTIMEDIA COMMUNICATIONS  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
ART-115	Basic Design: Two Dimensional Design	4
CS-120	Survey of Computing	4
DMC-100	Introduction to Media Arts	3
LIB-101	Introduction to Library Research	1
WR-121	English Composition	4
— —	PE/Health requirement (see page 21)	1



**WINTER TERM**

DMC-104	Digital Video Editing	4
J-211	Mass Media & Society	
or SP-212	Mass Media & Society	4
MTH-065	Algebra II (or higher level of math)	4
MUS-145	Introduction to Digital Sound, Video & Animation	3
SP-100	Basic Speech Communication	
or PSY-101	Human Relations	3

**SPRING TERM**

ART-262	Digital Photography & Photo-Imaging	3
CS-125H	HTML & Web Site Design	3
DMC-190	DMC Portfolio Project I	4
WR-262	Introduction to Screenwriting	4
— —	Focus Area	3-4

**SUMMER TERM**

DMC-280	Digital Multimedia Communications/CWE	3
— —	Focus Area	3-6

**DIGITAL MULTIMEDIA COMMUNICATIONS  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

**FALL TERM** **CREDITS**

HUM-233	Electronic Culture	
or SSC-233	Electronic Culture	4
LIB-201	Information Credibility	3
MUS-146	Entertainment Law & New Media	3
— —	Focus Area	6-8

**WINTER TERM**

— —	Humanities program electives	6
— —	Digital Multimedia Communications program electives or Focus Area	9-13

**SPRING TERM**

DMC-191	DMC Portfolio Project II	4
— —	Digital Multimedia Communications program elective	3-4
— —	Focus Area	6-8

*Minimum credits required for degree* 101-114

**ADDITIONAL COURSES FROM FOCUS AREA**

Complete all courses from one of the following Focus Areas

**GRAPHIC DESIGN**

<b>COURSE</b>		<b>CREDITS</b>
ART-106	Animation & Motion Graphics I	
or DMC-106	Animation & Motion Graphics I	3
ART-115	Basic Design: Two Dimensional Design	4
ART-116	Basic Design: Color Theory & Composition	4
ART-131	Drawing	
or ART-132	Drawing	
or ART-133	Drawing	4
ART-221	Flash Animation: Design & Techniques	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
ART-262	Digital Photography & Photo-Imaging	3
CS-195	Multimedia for the Web	3

**WEB DESIGN**

**COURSE** **CREDITS**

ART-115	Basic Design: Two Dimensional Design	4
ART-116	Basic Design: Color Theory & Composition	4
ART-221	Flash Animation: Design & Techniques	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
ART-227	Computer Graphics III	3
ART-262	Digital Photography & Photo-Imaging	3
BA-103	Business Strategies for Computer Consultants	3
CS-125H	HTML & Web Site Design	3
CS-135I	Advanced Web Design	3
CS-195	Multimedia for the Web	3

**BROADCAST JOURNALISM**

**COURSE** **CREDITS**

ENG-230	Documentary & Experimental Filmmaking	
or DMC-230	Documentary & Experimental Filmmaking	4
J-216	Reporting	4
J-220	Introduction to Broadcast Journalism	4
J-221	Broadcast Journalism	4
J-222	Advanced Broadcast Journalism	4
SP-129	Oral Interpretation	4
SP-167	Parliamentary Procedure	4

**FILM STUDIES**

**COURSE** **CREDITS**

DMC-205	Directing for Film & Video	4
DMC-264	Digital Filmmaking	4
DMC-265	Advanced Digital Filmmaking	4
ENG-105	Introduction to Drama	4
ENG-195	American Film	
or DMC-195	American Film	4
ENG-295	Revolutionary Film	
or DMC-295	Revolutionary Film	4
WR-262	Introduction to Screenwriting	4

**VIDEO PRODUCTION**

**COURSE** **CREDITS**

ART-106	Animation & Motion Graphics I	
or DMC-106	Animation & Motion Graphics I	3
DMC-104	Digital Video Editing	4
DMC-205	Directing for Film & Video	4
DMC-242	Field Recording & Sound Design for Media	1
DMC-247	Music, Sound & Moviemaking	
or MUS-247	Music, Sound & Moviemaking	3
DMC-264	Digital Filmmaking	4
DMC-265	Advanced Digital Filmmaking	4
ENG-230	Documentary & Experimental Filmmaking	
or DMC-230	Documentary & Experimental Filmmaking	4
MUS-145	Introduction to Digital Sound, Video & Animation	3
WR-262	Introduction to Screenwriting	4

**AUDIO & SOUND ENGINEERING**

**COURSE** **CREDITS**

DMC-147	Music, Sound, and Moviemaking	
or MUS-147	Music, Sound, and Moviemaking	1
DMC-242	Field Recording & Sound Design for Media	1
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-108	Introduction to Audio Recording II	3
MUS-109	Introduction to Audio Recording III	3
MUS-148	Live Sound Engineering	3

*Continued*

ODE CAREER LEARNING AREA  
*Arts, Information and Communications*

*Digital Multimedia Communications continued...*

**MUSIC & SOUND FOR MEDIA**

COURSE		CREDITS
DMC-242	Field Recording & Sound Design for Media	1
DMC-247	Music, Sound, and Moviemaking	3
or MUS-247	Music, Sound, and Moviemaking	3
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-141	Introduction to the Music Business	3
MUS-142	Introduction to Electronic Music I	3
MUS-143	Introduction to Electronic Music II	3
MUS-144	Introduction to Electronic Music III	3
MUS-145	Introduction to Digital Sound, Video & Animation	3

**DIGITAL MULTIMEDIA COMMUNICATIONS PROGRAM ELECTIVES**

COURSE		CREDITS
BA-101	Introduction to Business	4
BA-120	Project Team Tools	3
BA-124	Negotiation: Project Management	3
BA-223	Principles of Marketing	4
CS-125P	Computer Publishing	3
CS-125R	Podcasting	3
DMC-180	Digital Multimedia Communications Internship	1-12
DMC-192	Digital Multimedia Communications Portfolio Project III	4
ENG-279	Focused Drama Study	1
J-134	Photojournalism	4
J-218	Editing & Design	4
J-226	Newspaper Production	4
MUS-130	Music Media: Sex, Drugs, Rock & Roll	1
MUS-230	Music Media: Sex, Drugs, Rock & Roll	4
SP-112	Persuasive Speaking	4
SP-150	Competitive Platform Speaking	4
SP-167	Parliamentary Procedure	4
TA-101	Appreciation of Theatre Arts	4
TA-102	Appreciation of Theatre Arts	4
TA-103	Appreciation of Theatre Arts	4
TA-111	Fundamentals of Technical Theatre	4
TA-112	Fundamentals of Technical Theatre	4
TA-113	Fundamentals of Technical Theatre	4
TA-141	Acting I	4
TA-142	Acting II	4
TA-143	Acting III	4
WR-122	English Composition	4
WR-123	English Composition	3
WR-222	English Composition	4
WR-227	Technical Report Writing	4
WR-240	Creative Writing: Nonfiction	4
WR-241	Creative Writing: Fiction	4
WR-242	Creative Writing: Poetry	4
WR-245	Advanced Poetry Writing	4
WR-246	Advanced Creative Writing: Editing & Publishing	4
WR-247	Advanced Playwriting	4
WR-249	Publishing on Land and Online	1
WR-263	Advanced Screenwriting	4
WR-268	Script Analysis	4
WR-269	The Art of Dialog	4

**HUMANITIES PROGRAM ELECTIVES**

Additional selected humanities electives must be from different subject areas and from the following list of prefixes and courses not already used in the degree: ANT, ART, EC, ENG, DMC, GEO, HST, J, MUS, PS, PSY, SOC, SSC, WR, WS

## Electronic Publishing

■ *Certificate*

Curriculum focuses on the preparation of professional-looking reports, forms, newsletters, technical and academic papers, display advertising, brochures and business presentations. Course work emphasizes the key skill areas needed for success including, communications, design, computer applications and production. The program focuses on the high-tech administrative assistant skills needed for a high-end administrative support position.

**PROGRAM OUTCOMES**

Upon successful completion of this certificate students should be able to demonstrate entry-level skills to qualify for jobs in electronic publishing, both printed and online.

**CAREERS**

Career opportunities include graphic designer, desktop publisher and production artist.

For information contact Sharon Parker, ext. 2585 or [sharonp@clackamas.edu](mailto:sharonp@clackamas.edu)

**ELECTRONIC PUBLISHING CERTIFICATE**

FALL TERM		CREDITS
ART-115	Basic Design: Two Dimensional Design	4
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
BT-124	Business Editing I	3
MTH-050	Technical Mathematics I	3
WINTER TERM		
ART-116	Basic Design: Color Theory & Composition	4
BA-104	Business Math	3
BT-125	Business Editing II	3
BT-172	Introduction to Microsoft Outlook	2
WR-121	English Composition	4
SPRING TERM		
ART-225	Computer Graphics I	3
BA-205	Solving Communication Problems w/Technology	4
BA-280	Business/CWE	3
BA-285	Human Relations in Business	4
BT-220I	Desktop Publishing: InDesign	3
<i>Minimum credits required for certificate</i>		51

# Music Technology

## Certificate

The Music Technology certificate gives students the core skills needed to enter the sound and music production industry.

### PROGRAM OUTCOMES

Program outcomes should include the skills necessary for entry-level employment into a variety of music and sound careers.

### CAREERS

Careers include recording engineer, live sound engineer, media and sound post-production for internet companies, sound/music for video games, sound/media engineer for TV, recording/sound for advertising production, video post-production engineer, sound engineer for radio, video production engineer, film sound recording engineer, film post production for mixed media, film post production for sound only, film sound designer (FX), film Foley artist, technical support for music production software companies, technical development for music production hardware and software and sound technical development for software companies.

For information contact Brian Rose, ext. 5226 or [brianr@clackamas.edu](mailto:brianr@clackamas.edu)

### MUSIC TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
MUS-107	Introduction to Audio Recording I	3
MUS-140	Careers in Music	3
MUS-142	Introduction to Electronic Music I: MIDI	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4
WINTER TERM		
MUS-108	Introduction to Audio Recording II	3
MUS-141	Introduction to the Music Business	3
MUS-143	Introduction to Electronic Music II: Sequencing & Sampling	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	3-5
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4
SPRING TERM		
MUS-109	Introduction to Audio Recording III	3
MUS-144	Introduction to Electronic Music III: Digital Audio	3
MUS-280	Music/CWE	2
SP-100	Basic Speech Communication	
or SP-126	Communication Between the Sexes	
or SP-140	Introduction to Intercultural Communication	
or SP-218	Interpersonal Communication	3-4
— —	Music Technology program basics	3
— —	Music Technology program electives	2
<i>Minimum credits required for certificate</i>		50-60

### MUSIC TECHNOLOGY PROGRAM BASICS

Complete nine credits from the following:

COURSE		CREDITS
MUP-100	Individual Lessons: Non-Music Majors	1
MUS-101	Music Fundamentals	3
MUS-102	Music Fundamentals	3
MUS-103	Music Fundamentals	3
MUS-105	Music Appreciation	3
MUS-131	Group Piano: Piano for Pleasure	1
MUS-132	Group Piano: Piano for Pleasure	1
MUS-133	Group Piano: Piano for Pleasure	1
MUS-134	Group Voice: Anyone Can Sing	1
MUS-135	Group Voice: Anyone Can Sing	1
MUS-136	Group Voice: Anyone Can Sing	1
MUS-137	Group Guitar I: Guitar for Dummies	1
MUS-138	Group Guitar II	1
MUS-139	Group Guitar III	1
MUS-202	Music Literature: Baroque-Classical	4
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

### MUSIC TECHNOLOGY PROGRAM ELECTIVES

Complete six credits from the following:

COURSE		CREDITS
MUP-100	Individual Lessons: Non-Music Majors	1
MUP-102	Concert Band	2
MUP-104	Pep Band	1
MUP-105	Jazz Ensemble	2
MUP-121	Clackamas Chorale	1
MUP-122	Chamber Choir	2
MUP-125	Voice Jazz Ensemble	2
MUP-141	College Orchestra	1
MUP-241	College Orchestra	1
MUS-101	Music Fundamentals	3
MUS-102	Music Fundamentals	3
MUS-103	Music Fundamentals	3
MUS-105	Music Appreciation	3
MUS-130	Music & Media: Sex, Drugs, Rock & Roll	1
MUS-131	Group Piano: Piano for Pleasure	1
MUS-132	Group Piano: Piano for Pleasure	1
MUS-133	Group Piano: Piano for Pleasure	1
MUS-134	Group Voice: Anyone Can Sing	1
MUS-135	Group Voice: Anyone Can Sing	1
MUS-136	Group Voice: Anyone Can Sing	1
MUS-137	Group Guitar I: Guitar for Dummies	1
MUS-138	Group Guitar II	1
MUS-139	Group Guitar III	1
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-146	Entertainment Law & New Media	3
MUS-147	Music, Sound & Moviemaking	1
MUS-148	Live Sound Engineering	3
MUS-202	Music Literature: Baroque-Classical	4
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

ODE CAREER LEARNING AREA  
*Arts, Information and Communications*

## Web Design & Development Specialist

### ▲ Associate of Applied Science Degree

The Web Design & Development Specialist program prepares students for technical positions related to web programming and design. This multidisciplinary program incorporates classes from computer science, art, English and business. Course work includes computer graphics and design, web development with a focus on current industry standards, web server administration, data-driven web programming, multimedia and animation, and technical writing. Cooperative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

#### PROGRAM PREREQUISITES

Prerequisites for first term classes include completing course work for CS-120 Survey of Computing, WR-095 Paragraph to Essay, and MTH-060 Algebra I or placement in CS-121 Computer Applications, WR-121 English Composition and MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

#### PROGRAM OUTCOMES

Program outcomes should include entry-level skills for employment in web design, production, programming, and development fields, as well as graphic design fields. Students will be exposed to a wide range of web-related programming languages, web development tools, and graphic design techniques and applications.

#### CAREERS

Career opportunities may include web designer/consultant, webmaster, web programmer, web systems specialist, and graphic designer.

For information contact Len Eaton, ext. 2751 or [lene@clackamas.edu](mailto:lene@clackamas.edu)

#### WEB DESIGN & DEVELOPMENT SPECIALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM	CREDITS
ART-225 Computer Graphics I	3
CS-121 Computer Applications	3
CS-140 Operating Systems I	4
CS-150 Computer Technician Orientation	2
MTH-065 Algebra II	4

#### WINTER TERM

ART-226 Computer Graphics II	3
CS-125H HTML & Web Site Design	3
CS-179 Data Communications Concepts	3
CS-240W Operating Systems II: Windows	3
WR-121 English Composition	4

#### SPRING TERM

ART-227 Computer Graphics III	3
ART-262 Digital Photography & Photo-Imaging	3
CS-135I Advanced Web Design	3
CS-140U Operating Systems I: Linux/UNIX	3
CS-280 Computer Science/CWE	3

#### WEB DESIGN & DEVELOPMENT SPECIALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM	CREDITS
BA-103 Business Strategies for Computer Consultants	3
CS-133S Web Application Development I	3
CS-135DB Advanced Database	3
WR-122 English Composition	4
— — Human Relations requirement (see page 21) (Recommended: BA-285 or PSY-101)	3-4

#### WINTER TERM

CS-195 Multimedia for the Web	3
CS-233S Web Application Development II	3
CS-275 Database Design	3
CS-289I Web Server Administration: Internet Information Server	3
WR-227 Technical Report Writing	4
— — PE/Health requirement (see page 21)	1

#### SPRING TERM

ART-221 Flash Animation: Design & Techniques	3
CS-234S Web Application Development III	3
CS-280 Computer Science/CWE	6
CS-289A Web Server Administration: Apache Web Server	3
CS-297W Website Capstone	3

*Minimum credits required for degree* 98-99

## Web Design Specialist

### ■ Certificate

The Web Design program should prepare students for technical positions related to web and graphic design. This multidisciplinary program incorporates classes from computer science and art. Course work includes a strong emphasis on computer graphics and design, data communications theory, operating systems, and web design with a focus on current industry standards. Cooperative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

**PROGRAM PREREQUISITES**

Prerequisites for first term classes include completed course work or placement out of CS-120 Survey of Computing, WR-095 Paragraph to Essay, and MTH-060 Algebra I or placement in CS-121 Computer Applications, WR-121 English Composition, and MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

**PROGRAM OUTCOMES**

Program outcomes should include entry-level skills for employment in web design, production, and graphic design. Students will be exposed to a wide range of web development tools and graphic design techniques and applications.

**CAREERS**

Career opportunities may include web designer, web production staff, and graphic designer.

For information contact Len Eaton, ext. 2751 or lene@clackamas.edu

**WEB DESIGN SPECIALIST CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
ART-115	Basic Design: Two Dimensional Design	4
CS-121	Computer Applications	3
CS-140	Operating Systems I	4
CS-150	Computer Technician Orientation	2
MTH-065	Algebra II	4
<b>WINTER TERM</b>		
ART-225	Computer Graphics I	3
CS-125H	HTML & Web Site Design	3
CS-179	Data Communications Concepts	3
CS-240W	Operating Systems II: Windows	3
WR-121	English Composition	4
<b>SPRING TERM</b>		
ART-226	Computer Graphics II	3
ART-262	Digital Photography & Photo-Imaging	3
CS-135I	Advanced Web Design	3
CS-280	Computer Science/CWE	3
— —	Human Relations requirement (see page 21) (Recommended: BA-285 or PSY-101)	3-4
<i>Minimum credits required for certificate:</i>		48-49

ODE CAREER LEARNING AREA  
**Business and Management**

- 41 *Accounting AAS Degree*
  - *Accounting Clerk Certificate*
- 43 *Administrative Office Professional AAS Degree*
  - *Administrative Office Assistant Certificate*
  - *Administrative Office Assistant Training Certificate*
- 44 *Business Management Certificate*
- 45 *Marketing & Management AAS Degree*
  - *Marketing Certificate*
- 46 *Project Management AAS Degree*
  - *Project Management/Leadership & Communication Career Pathway Certificate*
  - *Project Management Certificate*
  - *Project Management/Tools & Techniques Certificate*
- 48 *Retail Management AAS Degree*
  - *Retail Management Certificate (less than one year)*
  - *Retail Management Certificate*
- 50 *Supervisory Training Certificate*

**Accounting**

▲ *Associate of Applied Science Degree*

The Accounting program at Clackamas emphasizes developing an advanced understanding of accounting principles, analytical skills and the capacity to solve problems. Students should have the ability to reason, read with comprehension and compute math applications.

The program is not designed to lead to a traditional four-year business administration degree, although it may articulate with accelerated and nontraditional programs such as those offered by private universities.

**PROGRAM OUTCOMES**

Successful completion of this degree program should prepare students for entry-level employment in accounting and office careers. Students completing this degree may sit for a civil service exam at level GS8. They will analyze, summarize and record financial transactions and prepare summary statements for small and medium-sized businesses, both manually and using computerized systems.

**CAREERS**

Career opportunities include GS8 Accountant I, book-keeper, data-entry clerk, financial staff accountant, cost accountant and general office clerk.

For information contact Hugo Grimaldi, ext. 2151 or hugog@clackamas.edu

*Continued*



ODE CAREER LEARNING AREA  
*Business and Management*

*Accounting continued...*

**ACCOUNTING ASSOCIATE OF APPLIED SCIENCE DEGREE:  
1ST YEAR**

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
WR-121	English Composition	4

WINTER TERM		CREDITS
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-177	Payroll Accounting	3
BA-212	Financial Accounting II	4
BA-251	Supervisory Management	3

SPRING TERM		CREDITS
BA-205	Solving Communication Problems with Technology	4
BA-213	Decision Making with Accounting Information	4
BA-218	Personal Finance	3
BA-285	Human Relations in Business	4

**ACCOUNTING ASSOCIATE OF APPLIED SCIENCE DEGREE:  
2ND YEAR**

FALL TERM		CREDITS
BA-223	Principles of Marketing	4
BA-240	Government Accounting	4
BA-256	Income Tax Accounting	3
— —	PE/Health requirement (see page 21)	1

WINTER TERM		CREDITS
BA-206	Management Fundamentals	4
BA-216	Cost Accounting	3
BA-222	Financial Management	3
BA-227	Business Law II	4

SPRING TERM		CREDITS
BA-217	Budgeting for Managers	3
BA-225	Business Report Writing	3
BA-248	Auditing	3
BA-280	Business/CWE	3
BT-105	Computerized Accounting	3

*Minimum credits required for degree* 92

\* For this degree, BA-104 meets the Related Instruction Computation requirement.

## Accounting Clerk

### Certificate

Curriculum includes basic bookkeeping and accounting, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related tasks. Graduates of this certificate program can specialize in tax preparation or general accounting assistant work.

#### PROGRAM OUTCOMES

Successful completion of this certificate program should prepare students for entry-level bookkeeping tasks, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related office tasks for an accounting firm or department. Students will be prepared to complete typical accounting clerk responsibilities such as journalizing, posting, assisting with tax, audit and other accounting procedures, preparing reports, communicating results and general office responsibilities.

#### CAREERS

Career opportunities include accounts payable clerk, accounts receivable clerk and data entry clerk for small and medium-sized service businesses.

For information contact Hugo Grimaldi, ext. 2151 or hugog@clackamas.edu

#### ACCOUNTING CLERK CERTIFICATE

FIRST TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-211	Financial Accounting I	4
or BA-111	General Accounting I	4
WR-121	English Composition	4

SECOND TERM		CREDITS
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-177	Payroll Accounting	3
BA-212	Financial Accounting II	4
or BA-112	General Accounting II	4
BA-251	Supervisory Management	3

THIRD TERM		CREDITS
BA-205	Solving Communication Problems with Technology	4
BA-213	Decision Making with Accounting Information	4
BA-226	Business Law I	4
BA-280	Business/CWE	3
BA-285	Human Relations in Business	4

*Minimum credits required for certificate* 51

**SUBSTITUTIONAL ACCOUNTING CLERK THIRD TERM FOCUS  
AREA FOR INCOME TAX PREPARERS:**

THIRD TERM		CREDITS
BA-226	Business Law I	4
BA-280	Business/CWE	3
BA-285	Human Relations in Business	4
BT-110	Income Tax Preparation	8

\* For this certificate, BA-104 meets the Related Instruction Computation requirement.

## Administrative Office Professional

### ▲ Associate of Applied Science Degree

This program provides a strong foundation of office and technology skills and courses in business administration, with an emphasis on critical thinking and human relations skills. The program includes Related Instruction requirements, industry standard computer programs and more advanced business administration courses.

#### PROGRAM OUTCOMES

Successful completion of this degree should provide students with the skills necessary for entry-level positions in a variety of administrative or office support roles in business, industry, or the medical or legal fields.

#### CAREERS

Career opportunities may include administrative assistant, office manager, project coordinator, legal assistant and medical secretary.

For information contact Tanya Patrick, ext. 2426 or [tanyap@clackamas.edu](mailto:tanyap@clackamas.edu)

**ADMINISTRATIVE OFFICE PROFESSIONAL  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BT-122	Keyboarding Skillbuilding	2
BT-124	Business Editing I	3
BT-160	Word I	3

#### WINTER TERM

BA-111 or BA-211	General Accounting I Financial Accounting I	4
BT-125	Business Editing II	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-176	Excel	3

#### SPRING TERM

BT-170	Access	3
BT-173	Introduction to Microsoft Powerpoint	2
BT-216	Office Procedures	4
BT-262	Integrated Projects	4
WR-121	English Composition	4

**ADMINISTRATIVE OFFICE PROFESSIONAL  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
BA-120	Project Management Fundamentals	3
BA-218	Personal Finance	3
BA-226	Business Law I	4
BA-285	Human Relations in Business	4
— —	Administrative Office Professional program electives	4

#### WINTER TERM

BA-156	Business Forecasting	3
BA-205	Solving Communication Problems with Technology	4
BA-224	Human Resource Management	4
BT-177	Microsoft Project	3
— —	PE/Health requirement (see page 21)	1

#### SPRING TERM

BA-225	Business Report Writing	3
BA-280	Business/CWE	3
BT-220I	Desktop Publishing: InDesign	3
— —	Administrative Office Professional program electives	4
<i>Minimum credits required for degree</i>		93

\* For this degree, BA-104 meets the Related Instruction Computation requirement.

**ADMINISTRATIVE OFFICE PROFESSIONAL PROGRAM ELECTIVES**

Any Business Administration (BA) or Business Technology (BT) course not included in the Administrative Office Professional program.

## Administrative Office Assistant

### ■ Certificate

This program provides a strong foundation of basic skills in office administration. Emphasis is placed on critical thinking and human relations skills. Course work includes Related Instruction requirements, industry-standard computer programs and specific business and office administration courses.

#### PROGRAM OUTCOMES

Students successfully completing this program should be eligible for entry-level employment in a variety of general office positions such as office clerk, receptionist, data entry clerk, office assistant, or general office support leading to positions (with experience) as an administrative assistant, legal assistant or office manager.

#### CAREERS

Career opportunities may include administrative assistant, legal secretary and medical secretary.

For information contact Tanya Patrick, ext. 2426 or [tanyap@clackamas.edu](mailto:tanyap@clackamas.edu)

*Continued*

ODE CAREER LEARNING AREA  
*Business and Management*

*Administrative Office Assistant continued...*

**ADMINISTRATIVE OFFICE ASSISTANT CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-104*	Business Math	3
BT-122	Keyboarding Skillbuilding	2
BT-124	Business Editing I	3
BT-160	Word I	3
WR-121	English Composition	4
<b>WINTER TERM</b>		
BA-285	Human Relations in Business	4
BT-125	Business Editing II	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-176	Excel	3
— —	Any BA/BT course not already included in the Administrative Office Assistant program	3
<b>SPRING TERM</b>		
BA-111	General Accounting I	4
or BA-211	Financial Accounting I	
BA-280	Business/CWE	3
BT-170	Access	3
BT-216	Office Procedures	4
BT-262	Integrated Projects	4
<i>Minimum credits required for certificate</i>		51

\* For this certificate, BA-104 meets the Related Instruction Computation requirement.

## *Administrative Office Assistant Training*

### ■ Certificate

A less than one year program. This is a targeted job training program is designed for those seeking new career opportunities in administrative office support positions. This program covers two-thirds of the required curriculum for the Administrative Office Assistant (one-year) certificate program.

#### **PROGRAM OUTCOMES**

Students completing this program should be eligible for entry-level employment in a variety of general office positions such as office clerk, receptionist, data entry clerk, office assistant or general office support.

#### **CAREERS**

Continued education and/or experience may lead to positions as administrative assistant, office manager, or legal or medical office assistants.

For more information contact Tanya Patrick, ext. 2426, or tanyap@clackamas.edu

**ADMINISTRATIVE OFFICE ASSISTANT TRAINING CERTIFICATE**

BA-104	Business Math	3
BA-111	General Accounting I	4
BT-122	Keyboard Skillbuilding	2
BT-124	Business Editing I	3
BT-125	Business Editing II	3
BT-160	Word I	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-176	Excel	3
BT-216	Office Procedures	4
<i>Minimum credits required for certificate</i>		30

## *Business Management*

### ■ Certificate

Curriculum focuses on basic management and leadership skills, motivation, decision-making, ethics, work flow analysis, ergonomics, personality and human relations, communications, technological innovations and adapting to change.

#### **PROGRAM OUTCOMES**

Upon successful completion of this certificate program students should be prepared for a variety of entry-level supervisory or management-trainee positions. Students will be prepared to perform management responsibilities such as budgeting, scheduling, planning, organizing, critical thinking, decision-making and managing scarce and diminishing resources.

#### **CAREERS**

Career opportunities may include management trainee, first-line supervisory, management analyst, merchandiser, or marketing/sales representative in small and medium-sized retail and service companies.

For information call Dale Hatfield, ext. 2361 or daleh@clackamas.edu

**BUSINESS MANAGEMENT CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-211	Financial Accounting I	4
BA-223	Principles of Marketing	4
WR-121	English Composition	4
<b>WINTER TERM</b>		
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-206	Management Fundamentals	4
BA-226	Business Law I	4
BA-285	Human Relations in Business	4

**SPRING TERM**

BA-205	Solving Communication Problems with Technology	4
BA-217	Budgeting for Managers	3
BA-218	Personal Finance	3
BA-224	Human Resource Management	4
BA-280	Business/CWE	3

Minimum credits required for certificate 55

\* For this certificate, BA-104 meets the Related Instruction Computation requirement.

## Marketing & Management

### ▲ Associate of Applied Science Degree

This degree focuses on developing marketing skills along with providing leadership and entrepreneurship training. This program is designed to enhance skills and employability for students that desire a career path in marketing and management as well as those who choose the entrepreneurial path.

**PROGRAM OUTCOMES**

Upon successful completion of this program, students should be able to demonstrate the skills necessary for entry-level employment in areas such as retail and wholesale sales, marketing management, market research and advertising and distribution. Students will prepare effective presentations, develop an effective marketing plan, prepare winning sales presentations and prepare themselves for upward mobility in the marketing and management fields.

**CAREERS**

Career opportunities include supervisors or manager of retail sales workers, sales associate, marketing manager, call center supervisor and account manager.

For information contact Dale Hatfield, ext. 2361 or daleh@clackamas.edu

**MARKETING & MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM	CREDITS	
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-224	Human Resource Management	4
WR-121	English Composition	4

**WINTER TERM**

BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4

**SPRING TERM**

BA-205	Solving Communication Problems w/Technology	4
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
BA-238	Sales	4

**MARKETING & MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM	CREDITS	
BA-206	Management Fundamentals	4
BA-212	Financial Accounting II	4
BA-218	Personal Finance	3
BA-239	Advertising	4
— —	PE/Health requirement (see page 21)	1

**WINTER TERM**

BA-213	Decision Making with Accounting Information	4
BA-222	Financial Management	3
BA-227	Business Law II	4
BA-249	Retailing	3
EC-201	Principles of Economics: MICRO	4

**SPRING TERM**

BA-217	Budgeting for Managers	3
BA-225	Business Report Writing	3
BA-261	Consumer Behavior	4
BA-280	Business/CWE	3
— —	Marketing & Management program elective	3

Minimum credits required for degree 96

\* For this degree, BA-104 meets the Related Instruction Computation requirement.

**MARKETING & MANAGEMENT PROGRAM ELECTIVES**

Any Business Administration (BA) or Business Technology (BT) course not included in the Marketing & Management program.

## Marketing

### ■ Certificate

This certificate focuses on technical marketing skills in areas such as need identification, product and service development, determining price, communicating information to potential customers, and distributing the products to customers.

**PROGRAM OUTCOMES**

Students who successfully complete this certificate should be qualified for entry-level marketing positions in areas such as retail and wholesale sales, market research, advertising and distribution. Skills developed in this certificate program should enhance the worker's employability and advancement potential in both technological and hard skills as well as the soft skills required for designing and implementing marketing programs in the workplace.

**CAREERS**

Career opportunities include wholesale and manufacturing sales representative, insurance and financial sales agents and marketing and advertising assistants.

For information contact Dale Hatfield, ext. 2361 or daleh@clackamas.edu

*Continued*

ODE CAREER LEARNING AREA  
*Business and Management*

*Marketing continued...*

**MARKETING CERTIFICATE**

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
BA-224	Human Resource Management	4
WR-121	English Composition	4
WINTER TERM		
BA-104*	Business Math	3
BA-156	Business Forecasting	3
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4
SPRING TERM		
BA-205	Solving Communication Problems w/Technology	4
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
BA-238	Sales	4
BA-280	Business/CWE	3
<i>Minimum credits required for certificate</i>		49

\* For this certificate, BA-104 meets the Related Instruction Computation requirement.

## Project Management

### ▲ Associate of Applied Science Degree

Upon completion of the two-year Project Management Associate of Applied Science (AAS) degree program, students with appropriate work experience are qualified to sit for the national certification examination in project management and to earn the PMP professional designation.

**PROGRAM OUTCOMES**

Students successfully completing this program should be able to demonstrate the skills necessary for employment in a variety of business and management settings, including utilities, manufacturing, merchandising, retail, sales, construction, consulting, government and non-profit organizations. More complex program outcome skills include project and business design, budgeting and scheduling, team management, project management, and project evaluation.

**CAREERS**

Careers may include project manager, project leader, project scheduler, and cost estimator. Potential job titles include project administration, project controller, project coordinator, deputy project manager, or junior project manager.

For information contact Kathy Christensen, ext. 5275 or [kathc@clackamas.edu](mailto:kathc@clackamas.edu)

**PROJECT MANAGEMENT ASSOCIATE OF APPLIED SCIENCE  
DEGREE: 1ST YEAR**

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-120	Project Management Fundamentals	3
BA-122	Teamwork: Project Management	3
MTH-065	Algebra II	4
WR-121	English Composition	4
WINTER TERM		
BA-123	Leadership and Motivation: Project Management	3
BA-125	Risk Management: Project Management	3
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BT-177	Microsoft Project	3
SPRING TERM		
BA-124	Negotiation: Project Management	3
BA-126	Project Management Workshop	3
BA-217	Budgeting for Managers	3
BA-285	Human Relations in Business	4

**PROJECT MANAGEMENT ASSOCIATE OF APPLIED SCIENCE  
DEGREE: 2ND YEAR**

FALL TERM		CREDITS
BA-111	General Accounting I	4
BA-205	Solving Communication Problems with Technology	4
BA-223	Principles of Marketing	4
BA-226	Business Law I	4
— —	PE/Health requirement (see page 21)	1
WINTER TERM		
BA-267	Organizational Behavior & Development	4
BA-280	Business/CWE	3
— —	Any BT/BA course not already in the Project Management program	3
SPRING TERM		
BA-162	Procurement for Managers	3
BA-225	Business Report Writing	3
BA-268	Applied Project Demonstration	6
BA-281	Business/CWE	3
<i>Minimum credits required for degree</i>		90



## Project Management/ Leadership & Communication

### ● Career Pathway Certificate

This program is designed for students with prior project management experience who want to build their interpersonal skills, including effective approaches to leadership and motivation, group dynamics, conflict, power, and organizational behavior. This program also provides a solid grounding in effective written and oral communication techniques, including meeting management, presentations, reports and correspondence. Since project managers typically spend over 80 percent of their time interfacing with people—communicating—these skills are critical to successful project management.

For information contact Kathy Christensen, ext. 5275 or [kathc@clackamas.edu](mailto:kathc@clackamas.edu)

#### PROJECT MANAGEMENT/LEADERSHIP & COMMUNICATION CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-122	Teamwork: Project Management	3
BA-123	Leadership & Motivation: Project Management	3
BA-124	Negotiation: Project Management	3
BA-205	Solving Communication Problems w/Technology	4
BA-267	Organizational Behavior & Development	4
BA-285	Human Relations in Business	4
<i>Minimum credits required for certificate</i>		21

## Project Management

### ■ Certificate

This program is designed for students who are interested in upgrading their professional skills, those who want to learn new and valuable interpersonal skills and those who might be interested in pursuing the two-year Project Management Associate of Applied Science (AAS) degree.

#### PROGRAM OUTCOMES

Program outcomes should include the skills necessary to gain entry-level employment in a variety of business and management settings including utilities, manufacturing, merchandising, retail sales, construction, consulting, government and non-profit organizations. This program prepares the student to continue working toward an AAS degree in project management or another closely related AAS degree.

#### CAREERS

Career opportunities include career enhancement such as more marketable skills in one's current employment or job opportunities in a project management training program.

For information contact Kathy Christensen, ext. 5275 or [kathc@clackamas.edu](mailto:kathc@clackamas.edu)

#### PROJECT MANAGEMENT CERTIFICATE

COURSE		CREDITS
BA-120	Project Management Fundamentals	3
BA-122	Teamwork: Project Management	3
BA-123	Leadership and Motivation: Project Management	3
BA-124	Negotiation: Project Management	3
BA-125	Risk Management: Project Management	3
BA-126	Project Management: Workshop	3
BT-177	Microsoft Project	3
<i>Minimum credits required for certificate</i>		21

## Project Management/ Tools & Techniques

### ● Career Pathway Certificate

This program is designed for students with prior project management experience and good interpersonal skills who want to develop their technical competencies in project management. It provides a foundation in fundamental project processes such as initiation, planning, execution, monitoring and control, and closing. The program also focuses on management techniques, such as project management. The software programs, Microsoft Project and Excel, are employed for project estimating, scheduling, tracking, and analysis. This program provides the tools and techniques required for successful project management.

For information contact Kathy Christensen, ext. 5275 or [kathc@clackamas.edu](mailto:kathc@clackamas.edu)

#### PROJECT MANAGEMENT/TOOLS & TECHNIQUES CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-120	Project Management Fundamentals	3
BA-125	Risk Management: Project Management	3
BA-126	Project Management Workshop	3
BA-162	Procurement for Managers	3
BA-217	Budgeting for Managers	3
BT-176	Microsoft Excel	3
BT-177	Microsoft Project	3
<i>Minimum credits required for certificate</i>		21

ODE CAREER LEARNING AREA  
*Business and Management*

## Retail Management

### ▲ Associate of Applied Science

This degree is sponsored by members of the retail industry and is recommended for students currently working in retail supervisory and middle management, as well as traditional students who desire to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

#### PROGRAM OUTCOMES

Upon successfully completing this degree, students should be able to demonstrate the skills necessary to work as retail sales supervisors and managers, and to advance to higher levels of responsibility including corporate advancement opportunities. Successful students will develop hard and soft skills in technology and communication to be effective team leaders and motivators. Students will experience a variety of roles in the retail industry and will pursue a career pathway that leads to increasing challenge, responsibility and opportunities.

#### CAREERS

Career opportunities include retail store managers, team managers, supervisors, corporate interns and trainees, and similar positions in all types of retail establishments. For information contact Joan Ryan at ext. 2363 or joanr@clackamas.edu

#### RETAIL MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-104*	Business Math****	3
BA-131	Introduction to Business Computing	4
BA-285*	Human Relations in Business	4
WR-101* or WR-121	Communication Skills: Occupational Writing English Composition**	3-4
— —	Any BA/BT/HD course not already in the Retail Management program	1
WINTER TERM		
BA-206	Management Fundamentals	4
BA-214 or BA-205	Business Communication Solving Communication Problems with Technology	3-4
BA-223	Principles of Marketing	4
SP-111	Public Speaking	4
SPRING TERM		
BA-111 or BA-211	General Accounting I Financial Accounting I**	4
BA-224	Human Resource Management	4
BA-249	Retailing	3
— —	Any BA/BT/HD course not already in the Retail Management program	4

#### RETAIL MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-217	Budgeting for Managers	3
BA-251	Supervisory Management	3
HE-261*	Community CPR	1
SP-140	Intercultural Communication**	4
— —	Any BA/BT/HD course not already in the Retail Management program	3
WINTER TERM		
BA-112 or BA-212	General Accounting II Financial Accounting II**	4
BA-226	Business Law 1**	4
EC-200 or EC-201	Introduction to Economics Principles of Economics: MICRO**	4
with EC-202	Principles of Economics: MACRO (8)**	
SP-105	Listening**	4
SPRING TERM		
BA-124	Negotiation: Project Management	3
BA-238	Sales	4
BA-261	Consumer Behavior	4
BA-280	Business/CWE	3
— —	Any BA/BT/HD course not already in the Retail Management program	1
<i>Minimum credits required for degree</i>		90-92

\*Meets general education requirements (computation, communication, human relations, PE/Health)

\*\* For transferring to the 3+1 program at Marylhurst University, these classes are required. (They cannot be waived or substituted.)

\*\*\*Will accept WR-123 or WR-222 if the student is transferring in credits or if the credits were taken prior to entering the program.

\*\*\*\*For this degree, BA-104 meets the Related Instruction Computation requirement. For transferring to Marylhurst for the articulated bachelor's degree, MTH-105 or MTH-111 meets the computation requirement.

#### MARYLHURST UNIVERSITY TRANSFER AGREEMENT

Marylhurst University will accept the CCC Retail Management Associate of Applied Science degree plus a third year module of courses at Clackamas that will transfer as the first three years of a bachelor's degree. Marylhurst will accept the following Clackamas courses as their third year:

#### THIRD YEAR ARTICULATION TO MARYLHURST UNIVERSITY

FALL TERM		CREDITS
BI-101	General Biology**	4
MTH-105 or MTH-111	Contemporary Math** College Algebra	4-5
WINTER TERM		
BI-102	General Biology**	4
MTH-243	Statistics I**	4
WR-122	English Composition**	4
SPRING TERM		
BA-267	Organizational Behavior & Development**	4
BI-103	General Biology**	4
WR-227	Technical Report Writing***	4

## Retail Management

■ *Certificate*

\* *Professional Upgrade*

A less than one-year program. This certificate is sponsored by members of the retail industry and is recommended for students currently working in retail sales positions or those students who would like to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

**PROGRAM OUTCOMES**

Upon successful completion of this certificate, students should be able to demonstrate skills necessary to successfully work as retail sales associates and to advance to higher levels of responsibility including supervisory management. Students should develop hard and soft skills in technology and communication to be effective support personnel as well as team leaders and motivators.

**CAREERS**

Career opportunities include retail clerks, cashiers, manager trainees, sales associates and other similar positions in all types of retail establishments.

For information contact Joan Ryan at ext. 2363 or joanr@clackamas.edu

**RETAIL MANAGEMENT CERTIFICATE**

COURSE		CREDITS
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-131	Introduction to Business Computing	4
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
BA-224	Human Resource Management	4
BA-249	Retailing	3
BA-285	Human Relations in Business	4
SP-111	Public Speaking	4
<i>Minimum credits required for certificate</i>		38

Note: This certificate is designed to be completed in less than one year.

## Retail Management

■ *Certificate*

This certificate is sponsored by members of the retail industry and is recommended for students currently working retail sales positions or those students who would like to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

**PROGRAM OUTCOMES**

Upon successful completion of this certificate, students should be able to demonstrate skills necessary to successfully work as retail sales associates and to advance to higher levels of responsibility including supervisory management. Students should develop hard and soft skills in technology and communication to be effective support personnel as well as team leaders and motivators.

**CAREERS**

Career opportunities include retail clerks, cashiers, manager trainees, sales associates, and other similar positions in all types of retail establishments. For information contact Joan Ryan at ext. 2363 or joanr@clackamas.edu

**RETAIL MANAGEMENT CERTIFICATE**

**FALL TERM**

BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
SP-111	Public Speaking	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

**WINTER TERM**

BA-111	General Accounting I	4
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4

**SPRING TERM**

BA-224	Human Resource Management	4
BA-249	Retailing	3
BA-285	Human Relations in Business	4
— —	Any BA/BT course not already included in the Retail Management program	4

*Minimum credit required for certificate* 45-46

\* For this certificate, BA-104 meets the Related Instruction Computation requirement.

## Supervisory Training

### ■ Certificate

### \* Professional Upgrade

A less than one-year program. This program is designed for those students who are interested in supervisory positions, employees desiring advancement to supervisory positions and supervisors seeking to upgrade supervisory skills.

#### PROGRAM OUTCOMES

Students successfully completing this program should be prepared for employment in a supervisory role or to move upward with their current employer in career advancement.

#### CAREERS

Career opportunities may include supervisor or manager of retail sales work force, supervisor or manager of personal services workers or supervisor or manager of non-retail sales workers.

For information contact Dale Hatfield, ext. 2361 or [daleh@clackamas.edu](mailto:daleh@clackamas.edu)

#### SUPERVISORY TRAINING CERTIFICATE

COURSE		CREDITS
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
BA-217	Budgeting for Managers	3
BA-224	Human Resource Management	4
BA-285	Human Relations in Business	4
WR-121	English Composition	4
<i>Minimum credits required for certificate</i>		23

### ODE CAREER LEARNING AREA

## Health Sciences

- 50 *Clinical Laboratory Assistant Certificate*
- 51 *Dental Assistant Certificate*
- 52 *Emergency Medical Technology Certificate*
- 53 *Gerontology Certificate*
- 53 *Medical Assistant Certificate*
- 55 *Nursing AAS Degree*

## Clinical Laboratory Assistant

### ■ Certificate

Clinical laboratory assistants serve a diverse ancillary role assisting other laboratory personnel, physicians and patients. Their duties may include data entry, laboratory billing practices, and the performance of ambulatory assistant-level testing according to standard operating procedures. Students are trained in all aspects of the medical laboratory support personnel, including phlebotomy, specimen processing, quality control, laboratory orientation, and regulation. Students will participate in unpaid, supervised externships in ambulatory or acute care laboratory settings.

The CCC Clinical Laboratory Assistant (CLA) program is approved through the National Accrediting Agency for Clinical Laboratory Science (NAACLS).

#### PROGRAM REQUIREMENTS AND PREREQUISITES

Students who wish to apply to the CLA program should inquire about an application in May prior to the start of the fall cohort. The CLA applications can be downloaded at our website, contacting the Allied Health Department at the Harmony campus or at the Oregon City campus by contacting the Enrollment Services Center and/or the Advising & Counseling Center. To determine the availability of applications and the appropriate deadlines for the CLA cohort, please visit the Nursing, Allied Health, and Public Services website at <http://depts.clackamas.edu/healthsciences>.

Applicants are advised that a high level of dexterity, the ability to multi-task, and a high degree of attention to detail are required for the successful completion of this program. Prior to formal acceptance into the CLA program, students must meet appropriate placement scores in reading, writing, and math by either taking the placement exams or by providing proof of a comparable assessment. Prior to the beginning of the program, students will need to provide proof of a recent physical examination by a licensed healthcare provider and proof of immunizations. All CLA students will be required to complete a criminal history background check and drug testing as arranged by the Allied Health Department at an appropriate organization. Curriculum prerequisites and requirements may be subject to change. In order to assure students have the most current information, please review the department website.

**PROGRAM OUTCOMES**

Upon successful completion of the program, students should be eligible to sit for the National Credentialing Agency (NCA) for Laboratory Personnel's phlebotomy examination and/or the American Medical Technologist (AMT) Certified Medical Laboratory Assistant (CMLA) examination and will be qualified for entry level employment as a clinical lab assistant/phlebotomist.

**CAREERS**

Career opportunities may include but are not limited to phlebotomist, laboratory specimen processor, waived testing analyzer, medical research assistant and physician office laboratory assistant.

Application packets with admission procedures and requirements are available at the Harmony Campus, Allied Health Department, from the Enrollment Services Center, the Advising & Counseling Center, or go to <http://depts.clackamas.edu/healthsciences>

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) page 149-150.

For information contact Helen Wand, 503-594-0694 or [helenw@clackamas.edu](mailto:helenw@clackamas.edu)

**CLINICAL LABORATORY ASSISTANT CERTIFICATE**

FALL TERM		CREDITS
BI-055	Introduction to Human Biology	
or BI-102	General Biology (prerequisite BI-101)	3-4
CLA-100	Introduction to Healthcare	2
CLA-101	Clinical Laboratory Assistant Skills I	4
MA-110	Medical Terminology	3
MA-115	Phlebotomy	1
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
CLA-102	Clinical Laboratory Assistant Skills II	4
CLA-115	Laboratory Administrative Skills	2
CLA-119	Phlebotomy/Laboratory Practicum I	3
CS-120	Survey of Computing	4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
SPRING TERM		
CLA-103	Clinical Laboratory Assistant Skills III	4
CLA-120	Phlebotomy/Laboratory Practicum II	4
CLA-125	Introduction to Clinical Research	2
PSY-101	Human Relations	3
SP-100	Basic Speech Communication	
or SP-218	Interpersonal Communication	3-4
<i>Minimum credits required for certificate</i>		48-52

Current First Aid and Healthcare Provider level CPR (AHA or ASHI) are required during practicums and must be taken prior to the first term practicum. All CLA students will be required to complete a criminal history background, provide proof of immunization, and students will be asked to take a drug test as arranged by the department.

Note: All clinical practicum courses are "Pass/No Pass." All other courses are letter grades and must be passed with a "C" grade or better in order to continue to the next term.

Core curriculum is sequential and may not be taken out of order, with the exception of CLA-100 which may be taken prior to beginning the program. Curriculum is intended to be completed in one academic year.

## Dental Assistant

**■ Certificate**

This program is designed to prepare students for entry level positions in the dental care setting. The goal of the program is to graduate students that have demonstrated competencies in clinical and administrative practices as well as demonstrated work ethics and professional values consistent with that of the American Dental Association (ADA). Core curriculum uses ADA standards and program approval by the ADA is pending.

**PROGRAM REQUIREMENTS AND PREREQUISITES**

Students who wish to apply to the CCC Dental Assistant (DA) program are welcome to apply for either our spring or fall cohort. The DA applications may be downloaded at our website or obtained by contacting the Allied Health Department at the Harmony campus or the Enrollment Services Center and/or the Advising & Counseling Center at the Oregon City campus. To determine the availability of applications and the appropriate deadlines for each cohort, please visit the Nursing, Allied Health, and Public Services website at <http://depts.clackamas.edu/healthsciences>

Applicants are advised that a high level of dexterity, the ability to multi-task, and a high degree of attention to detail are required for the successful completion of this program. Prior to formal acceptance into the DA program, students must meet appropriate placement scores in reading, writing, and math by either taking the placement exams or by providing proof of a comparable assessment. Prior to the beginning of the program, students will need to provide proof of a recent physical examination by a licensed healthcare provider and proof of immunizations. All DA students will be required to complete a criminal history background check and drug testing as arranged by the allied health department at an appropriate organization. Students will participate in unpaid, supervised externships in the dental care settings. Curriculum prerequisites and requirements may be subject to change. In order to assure students have the most current information, please review the department website.

*Continued*



## ODE CAREER LEARNING AREA

*Health Sciences*

*Dental Assistant continued...*

**PROGRAM OUTCOMES**

Upon successful completion of the program, students should be eligible to take the necessary exams offered through the Dental Assistant National Board (DANB) and the Oregon Board of Dentistry (OBD). Students will be prepared for entry level employment as a dental assistant.

**CAREERS**

Career opportunities may include but are not limited to managed care facilities, private dental practices, state and county clinics, dental schools and the insurance industry.

Application packets with admission procedures and requirements are available from the Enrollment Services Center, the Advising & Counseling Center, or <http://depts.clackamas.edu/healthsciences>

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) page 149-150.

For information contact Maria Corona, 503-594-0693 or [mariaac@clackamas.edu](mailto:mariaac@clackamas.edu)

**DENTAL ASSISTANT CERTIFICATE**

FIRST TERM		CREDITS
DA-101	Dental Radiology I	3
DA-104	Clinical Procedures I	3
DA-107	Dental Materials I	3
DA-110	Clinical Practicum I	1
DA-115	Dental Science	1
DA-125	Dental Infection Control	1
MTH-050	Technical Mathematics I	3-4
	or MTH-065 Algebra II	
SECOND TERM		
CS-120	Survey of Computing	4
DA-102	Dental Radiology II	1
DA-105	Clinical Procedures II	3
DA-108	Dental Materials II	2
DA-120	Clinical Practicum II	5
DA-135	Pharmacology/Medical Emergencies	1
THIRD TERM		
DA-106	Clinical Procedures III	2
DA-130	Clinical Practicum III	8
DA-145	Dental Office Procedures	2
PSY-101	Human Relations	3
WR-101	Communication Skills: Occupational Writing	3-4
	or WR-121 English Composition	
<i>Minimum credits required for certificate</i>		49-51

Current Healthcare Provider level CPR (AHA or ASHI) are required during practicums and must be taken prior to the first term practicum. All DA students will be required to complete a criminal history background, provide proof of immunization, and students will be asked to take a drug test as arranged by the department.

Note: The ADA requires all courses receive a letter grade. Students must achieve a "C" or higher grade in all required courses prior to advancing to the next term.

Core curriculum is sequential and may not be taken out of order. Core curriculum is intended to be completed over three consecutive terms.

## Emergency Medical Technology

**■ Certificate**

Emergency Medical Technicians (EMTs) give immediate care to critically ill or injured people in the prehospital setting and provide transport to hospitals, care facilities and private residences. The ability to work under pressure in challenging environments, think critically to make difficult decisions independently and perform life-saving skills precisely are essential to success in this career. A criminal history background check, immunizations, and drug testing will be required.

EMTs in Oregon must be certified by the state through the Department of Health and Human Services, EMS & Trauma Systems Section (DHS EMS). National certification is available through the National Registry of EMTs (NREMT). Each certification requires approved continuing education classes in emergency care for certification renewal. The CCC Emergency Medical Technology (EMT) certificate program includes the required Oregon and national EMT-Basic certification.

**PROGRAM OUTCOMES**

The EMT program is designed to prepare students to begin their careers in Emergency Medical Services (EMS) and continue their education to the paramedic level. The EMT-Basic course prepares students to test for both national and state certification. The EMT-Intermediate course prepares candidates to test for Oregon certification.

**CAREERS**

Career opportunities that may require EMT training include but are not limited to: firefighter (career or volunteer), paramedic, search and rescue, critical care transport or basic life support transport provider. The EMT certificate can lead to a career as a paramedic if a student wishes to continue their studies and completes the requirements or an AAS-EMT (Associate of Applied Science - EMT) degree at an accredited institution.

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) page 149-150.

For information contact the EMT program director at 503-594-0696 or department at 503-594-0690 or visit <http://depts.clackamas.edu/EMT>

**EMERGENCY MEDICAL TECHNOLOGY CERTIFICATE**

FALL TERM		CREDITS
BI-231	Human Anatomy & Physiology I	4
EMT-101	EMT Basic-Part I	5
EMT-105	Introduction to Emergency Medical Services	3
MTH-065	Algebra II	4
SP-111	Public Speaking	4

**WINTER TERM**

BI-232	Human Anatomy & Physiology II	4
CS-120	Survey of Computing	4
EMT-102	EMT Basic-Part II	5
MA-110	Medical Terminology	3
WR-121	English Composition	4

**SPRING TERM**

BI-233	Human Anatomy & Physiology III	4
CJA-203	Crisis Intervention	3
EMT-106	Emergency Communications & Patient Transportation	3
EMT-107	EMT Rescue	3
SOC-205	Social Stratification & Social System	4

*Minimum credits required for certificate* 57

Current Healthcare Provider level CPR (AHA or ASHI) are required; criminal history background check, proof of immunization, and students will be asked to take a drug test as arranged by the department.

## Gerontology

### ■ Certificate

The Gerontology program offers a one-year certificate on the study of aging, which is designed for individuals who work with older people. The one-year certificate can serve as the first year of a two-year Associate of Applied Science degree in Human Services.

**PROGRAM OUTCOMES**

This program should provide the basic skills and knowledge necessary for many entry-level positions working with older people in health and social service settings, senior centers, and residential facilities for the elderly.

**CAREERS**

Career opportunities may include activity director, volunteer coordinator, senior services case worker, information and referral worker, client advocate, and administrative and support personnel in senior residential facilities.

For more information contact Maureen Mitchell 503-594-0700 or maureenm@clackamas.edu

**GERONTOLOGY CERTIFICATE**

FALL TERM		CREDITS
CS-120	Survey of Computing	4
GRN-181	Issues in Aging	3
HS-154	Community Resources	3
WR-121	English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4
— —	Gerontology program electives	3

**WINTER TERM**

GRN-182	Aging and the Body	3
GRN-184	Aging and the Individual	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Gerontology program elective	3

**SPRING TERM**

GRN-183	Death and Dying	3
HS-170	Preparation for Field Experience in Human Services	3
HS-280G	Gerontology/CWE	6
PSY-101	Human Relations	
or BA-285	Human Relations in Business	3-4
— —	Gerontology program elective	3-4

*Minimum credits required for certificate* 46-50

Current CPR certificates are required for a certificate in Gerontology.

**GERONTOLOGY PROGRAM ELECTIVES:**

COURSE	CREDITS	
BA-223	Principles of Marketing	4
FN-110	Personal Nutrition	3
FN-225	Nutrition	4
HE-151	Body and Drugs I	3
HE-152	Body and Drugs II	3
HE-255	Body & Alcohol	3
HS-130	Introduction to Hospice	3
HS-260	Victim Advocacy and Assistance	4
HS-267	Intervention Strategies Working with Families	4

Other electives may be approved by the Gerontology program advisor.

## Medical Assistant

### ■ Certificate

Medical assistants function as members of the healthcare delivery team and perform administrative, clinical and transdisciplinary functions. The CCC Medical Assistant (MA) program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAA-HEP), (35 East Wacker Drive, Suite 1970, Chicago, IL 60601-2208 or (312) 553-9355), on recommendation of the Curriculum Review Board of the American Association of Medical Assistants' Endowment (AAMAE).

**PROGRAM PREREQUISITES & REQUIREMENTS**

Students who wish to apply to the medical assistant program are welcome to apply for either our spring or fall cohort. The MA applications may be downloaded at our website or obtained by contacting the Allied Health Department at the Harmony campus or the Enrollment Services Center or the Advising & Counseling center at the Oregon City campus. To determine the availability of applications and the appropriate deadlines for each cohort, please visit the Nursing, Allied Health, and Public Services website at <http://depts.clackamas.edu/healthsciences>.

*Continued*

## ODE CAREER LEARNING AREA

*Health Sciences*

*Medical Assistant continued...*

Applicants are advised that a high level of dexterity, the ability to multi-task, and a high degree of attention to detail are required for the successful completion of this program. Prior to formal acceptance into the MA program, students must meet appropriate placement scores in reading, writing, and math by either taking placement exams or by providing proof of a comparable assessment. Prior to the beginning of the program, students will need to provide proof of a recent physical examination by a licensed healthcare provider, required immunizations, and have completed WR-101 or WR-121, and SP-100 or SP-218. All MA students will be required to complete a criminal history background check and drug testing as arranged by the allied health department at an appropriate organization. MA students will also be required to participate in unpaid, supervised externships in the ambulatory care setting.

Curriculum prerequisites and requirements may be subject to change. In order to assure students have the most current information, please review the department website.

Application packets with admission procedures and requirements are available at the Harmony campus in the Allied Health Department, or at the Oregon City campus in the Enrollment Services Center or the Advising & Counseling center, or at the website located at <http://depts.clackamas.edu/healthsciences>

**PROGRAM OUTCOMES**

Upon successful completion of the program, students should be eligible to sit for the American Association of Medical Assistants (AAMA) National Certification exam. Students should be prepared for entry-level employment as a medical assistant.

**CAREERS**

Career opportunities may include but are not limited to: employment in the ambulatory care setting, employment in the acute care setting, insurance billing and coding, administration, and phlebotomy.

For continuing education for healthcare providers see Healthcare Professional Development pages 149-150.

For information contact Karen Maynard, 503-594-0695 or [kmaynard@clackamas.edu](mailto:kmaynard@clackamas.edu)

**MEDICAL ASSISTANT PREREQUISITES FOR 2009-2010**

The following prerequisites must be completed prior to the start of the student's cohort. Curriculum prerequisites and requirements may change yearly. To see prerequisites or requirements for the 2010-2011 cohort year, please review the department website.

COURSE		CREDITS
SP-100	Basic Speech Communication	
or SP-218	Interpersonal Communication	3-4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

**MEDICAL ASSISTANT CERTIFICATE****FIRST TERM**

BI-055	Introduction to Human Biology	
or BI-102	General Biology (prerequisite: BI-101)	3-4
CS-120	Survey of Computing	4
MA-110	Medical Terminology	3
MA-112	Medical Office Practice	4
MA-145	Medical Coding & Health Information Management	3

**SECOND TERM**

MA-116	Introduction to Medications	2
MA-117	Clinical Lab Procedures I	2
MA-118	Examination Room Techniques	3
MTH-054	Math for Health Care Professionals	4
PSY-101	Human Relations	3

**THIRD TERM  
(WEEKS 1-5)**

MA-115	Phlebotomy	1
MA-121	Clinical Lab Procedures II	2
PSY-215	Introduction to Developmental Psychology	4

**(WEEKS 6-11)**

MA-119	Medical Assistant Practicum I	4
MA-120	Medical Assistant Practicum II	6

*Minimum credits required for certificate* 54-57

Current First Aid and Healthcare Provider level CPR (AHA or ASHI) are required during practicums and must be taken prior to the first term practicum. All MA students will be required to complete a criminal history background, provide proof of immunization, and take a drug test as arranged by the department.

Note: All clinical/practicum courses are "Pass/No Pass." All other courses are letter grades and must be passed with "C" or better.

Core curriculum is sequential and may not be taken out of order with the exception of MA-110 which may be taken before beginning the program. Core curriculum is intended to be completed over three consecutive terms.

Individuals who have been found guilty of a felony, or pleaded guilty to a felony, may not be eligible to take the Certified Medical Assistant (CMA) Exam. Direct questions to: AAMA Certification Department; 20 N. Wacker Dr.; Suite 1575; Chicago, IL 60606; e-mail: [certification@aama-ntl.org](mailto:certification@aama-ntl.org); phone: 800-228-2262.

## Nursing

### ▲ Associate of Applied Science Degree

#### NURSING ASSISTANT OPTIONS

Clackamas Community College offers a Nursing Assistant course that will prepare students to perform routine nursing assistant tasks in the sub-acute settings as well as the community. Students who complete this course are eligible to take the state certification exam for nursing assistants. In addition, the college offers a Certified Nursing Assistant 2-Acute course that will prepare students to perform routine nursing assistant tasks in the acute care settings. While these courses are not required for entry into the nursing program at Clackamas Community College, it is recommended for those who are interested in pursuing a career in nursing. Both courses are approved by the Oregon State Board of Nursing.

#### NURSING PROGRAM

Clackamas Community College is a full partner in the Oregon Consortium for Nursing Education (OCNE). The curriculum in OCNE nursing programs is a competency-based curriculum developed in collaboration with Oregon Health & Science University (OHSU) and other community colleges around the state. This curriculum, which has been approved by the Oregon State Board of Education as well as the Oregon State Board of Nursing, can ultimately culminate in a Baccalaureate of Science degree with a focus in nursing on the community college campus offered by OHSU. For more information on the OCNE curriculum, refer to [www.ocne.org](http://www.ocne.org).

Admission into the Nursing program is by special application only. The application is a two-step process. Students must submit application to the Registrar's Office by the deadline. Qualified applicants will progress to the interview/essay portion of application process. Acceptance to the nursing program allows for co-admission to Clackamas Community College and Oregon Health & Science University School of Nursing.

A physical examination by a licensed healthcare provider, immunizations, criminal history background check, and urine drug testing are required prior to clinical experience in the first term of the program. Drug use and/or conviction of a felony may result in the Oregon State Board of Nursing denying licensure upon graduation.

#### PROGRAM OUTCOMES

The OCNE curriculum addresses the need for nurses to be skilled in clinical judgment and critical thinking, evidenced based practice, relationship-centered care, interdisciplinary collaboration, and assisting individuals and families across the life span regarding self-care practices in areas of health promotion, acute and chronic illness as well as end of life issues.

The OCNE curriculum is designed as a four-year course of study with the first year devoted to pre-admission requirements. The second and third year of designated study will be taken at Clackamas Community College. Upon completion of the CCC nursing program, students will be eligible to receive their Associate of Applied Science degree in nursing and take the national examination (NCLEX-RN) for registered nurse licensure. Graduates of the nursing program at Clackamas Community College should be prepared for entry-level employment as a registered nurse. The student may elect to continue for the fourth year of study, leading to a Baccalaureate of Science degree with a focus in nursing offered by OHSU.

#### CAREERS

Career opportunities may include but are not limited to entry-level employment as a registered nurse in the acute care setting, sub-acute setting and the ambulatory care setting.

Information regarding the program, the application process and pre-nursing academic advising sessions is available at <http://depts.clackamas.edu/healthsciences/nur.asp>

For continuing education for healthcare providers see Healthcare Professional Development pages 149-150.

#### NURSING APPLICATION REQUIREMENTS

Students are eligible to be considered for admission to the nursing program after completing 30 credit hours of the Prerequisite/Required Preparatory courses listed below.

**BI-231 (Human Anatomy/Physiology I) must be completed and math competency must be demonstrated by the end of Winter Term 2010 to be considered for admission into the nursing program.**

NOTE: Deadline for application process will change during academic year 2010-2011. BI-231 and math competency must be demonstrated by end of Fall Term 2010 for consideration for admission into the Nursing program of Fall 2011.

A total of 45 credit hours of the Prerequisite/Required Preparatory courses must be completed prior to the start of the first term of the nursing program.

- Minimum Prerequisite/Required Preparatory Course credits to apply: 30
- Prerequisite/Required Preparatory Course credits prior to starting NRS course work during first term of nursing program: 45

Completion of all Prerequisite/Required Preparatory courses must be with a letter grade of "C" or better. Plus and minus grades will not be factored into the GPA calculations. If a course has been taken more than once, the most recent grade received will be the course considered. Application to the nursing program requires a minimum GPA of 3.0 for all completed Prerequisite/Required Preparatory courses.

*Continued*



## ODE CAREER LEARNING AREA

*Health Sciences*

Nursing continued...

**NURSING PREREQUISITES/REQUIRED PREPARATORY COURSES**

COURSE		CREDITS
BI-231	Human Anatomy/Physiology I	4
BI-232	Human Anatomy/Physiology II	4
BI-233	Human Anatomy/Physiology III	4
CS-120	Survey of Computing	4
FN-225	Nutrition	4
MTH-095	Algebra III	4
PSY-215	Introduction to Developmental Psychology	4
WR-121	English Composition	4
WR-122	English Composition	4
— —	Humanities, Social Science, or Natural Science	9

• Students may need to take elective credits in order to meet the 45 credit hour prerequisite minimum required for entry into the nursing program.

- At least six credits must come from Social Sciences
- See list below for approved prerequisite/elective courses

Note: Courses listed above may have prerequisites. See course descriptions for those requirements.

**NURSING ASSOCIATE OF APPLIED SCIENCE DEGREE:**

FIRST TERM		CREDITS
— —	Biology with genetics*	5
BI-234	Introductory Microbiology**	4
NRS-110	Foundations of Nursing – Health Promotion	4
NRS-110C	Foundations of Nursing – Health Promotion Clinical	5
PE-185	Physical Education***	1

\* BI-112 meets this requirement and must be completed prior to start of second term of nursing program.

\*\* BI-234 must be completed prior to start of second term of nursing program.

\*\*\* Current CPR for Healthcare Providers (AHA) is required prior to first term of the first year of the nursing program and meets PE requirement.

**SECOND TERM**

NRS-111	Foundations of Nursing in Chronic Illness I	2
NRS-111C	Foundations of Nursing in Chronic Illness I Clinical	4
NRS-230	Clinical Pharmacology I	3
NRS-232	Pathophysiological Processes I	3

**THIRD TERM**

NRS-112	Foundations of Nursing in Acute Care I	2
NRS-112C	Foundations of Nursing in Acute Care I Clinical	4
NRS-231	Clinical Pharmacology II	3
NRS-233	Pathophysiological Processes II	3
— —	Humanities, Social Science or Natural Science electives, if needed	3

**FOURTH TERM**

NRS-222	Foundations of Nursing in Acute Care II & End of Life	3
NRS-222C	Foundations of Nursing in Acute Care II & End of Life Clinical	6
— —	Humanities, Social Science or Natural Science electives, if needed	6

**FIFTH TERM**

NRS-221	Foundations of Nursing in Chronic Illness II & End of Life	3
NRS-221C	Foundations of Nursing in Chronic Illness II & End of Life Clinical	6
— —	Humanities, Social Science or Natural Science electives, if needed	6

**SIXTH TERM**

NRS-224	Integrative Practicum	2
NRS-224C	Integrative Practicum Clinical	7
WR-123	English Composition	
or WR-227	Technical Report Writing	3-4
— —	Humanities, Social Science or Natural Science electives, if needed	3

Minimum credits required for degree 90-92

Students must achieve “C” or higher grades in all required courses (including prerequisites/preparatory courses) prior to advancing to the next term.

Core curriculum is sequential and may not be taken out of order. Core nursing curriculum is intended to be completed in two academic years for an AAS degree

**APPROVED COURSES TO MEET PREREQUISITE/ELECTIVE CREDIT REQUIREMENTS FOR THE NURSING PROGRAM**

NOTE: All electives must be taken at the 100 level or higher unless otherwise noted.

**HUMANITIES (ARTS & LETTERS)**

Courses used in this area must be at least three credits.

Select courses with a prefix of:

ASL, FR, GER, RUS, SPN (other foreign languages are accepted; languages must be 200 level)

ART, DMC, ENG, HUM (except HUM-100), J, MUP, MUS, PHL, R, TA

SP (courses numbered SP-126 and above)

WR (except WR-101, 121, 122, 123 or 227)

**SOCIAL SCIENCE**

Courses used in this area must be at least three credits.

Select courses with a prefix of:

ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

**NATURAL SCIENCES (SCIENCE/MATH/COMPUTER SCIENCE)**

Courses used in this area must be at least six credits.

Select courses with a prefix of:

ASC, BI\* (except BI-055, BI-163), BOT, CH (except CH-150), CS, ESR, G (except G-119, G-124), GS (except GS-160), MTH (MTH-095\*\* accepted), PH, Z

\*Concurrent enrollment required for BI-160/BI-160L or BI-165C/BI-165CL

\*\* MTH-095 may be applied toward prerequisite credits but not toward the BSN degree.



**NURSING**

NUR-160, NUR-217, NUR-288

**BACCALAUREATE OF SCIENCE DEGREE WITH A FOCUS IN NURSING**

After receiving the AAS in Nursing degree, students who wish to continue on for their baccalaureate degree may do so through co-admission at OHSU. Students who plan to continue through to OHSU must be aware that to earn their Baccalaureate of Science Degree with a focus in Nursing, they must have:

- Two years of the same high school foreign language, or two terms of college-level foreign language credit (includes American Sign Language) or a foreign language proficiency examination.
- MTH-243 Probability and Statistics

**COURSE WORK FOR A BACCALAUREATE OF SCIENCE DEGREE WITH A FOCUS IN NURSING THROUGH OHSU WILL INCLUDE THE FOLLOWING NURSING CLASSES:**

NRS-410	Population Based Care: Chronic Illness & Health Promotion
NRS-411	Epidemiology
NRS-412	Leadership Outcomes Management in Nursing
NRS-424*	Clinical Immersion I Capstone I or Minor course work
NRS-425	Clinical Immersion II Capstone II or Minor course work

At least 15 credits of elective credit must be taken at the upper division level (300/400 level) for the BS program. These can be taken under a co-enrollment agreement with PSU, OIT, EOU, or SOU.

\* NRS-224 articulates to OSHU for substitution of NRS-424.

## ODE CAREER LEARNING AREA

*Human Resources*

- 57 *Corrections AAS Degree*
- *Corrections Certificate*
  - *Juvenile Corrections Certificate*
- 59 *Criminal Justice AAS Degree*
- *Crime Analysis Certificate*
- 61 *Early Childhood Education & Family Studies AAS Degree*
- *Early Childhood Education & Family Studies Certificate*
  - *Child Development Associate Career Pathway Certificate*
  - *Child & Family Studies Career Pathway Certificate*
- 63 *Emergency Management AAS Degree*
- 63 *Human Resource Management Certificate*
- 63 *Human Resource Management Essentials Career Pathway Certificate*
- 64 *Human Services AAS Degree*
- *Career Development Facilitator Career Pathway Certificate*
- 65 *Paraeducator Certificate*

**Corrections**▲ *Associate of Applied Science Degree*

The Corrections program utilizes an interdisciplinary approach, including sociological, psychological and biological behavioral perspectives to provide students with a well-rounded basis for interacting with corrections clients in a variety of correctional settings.

Course work includes cooperative work experience, and hands-on experience in a correctional agency to supplement and apply knowledge gained in academic courses.

**PROGRAM OUTCOMES**

Successful completion of this degree should provide the skills and knowledge needed to qualify for a job in a federal, state or local corrections system. Corrections professionals may also be qualified to move into other areas of law enforcement or social service.

**CAREERS**

Career opportunities are generally in jail and prison facilities as well as community corrections agencies and may include correctional officer, correctional counselor and probation and parole officer.

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

*Continued*

## ODE CAREER LEARNING AREA

*Human Resources**Corrections continued...***CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE:  
1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CJA-110	Introduction to Law Enforcement	3
CJA-130	Introduction to Corrections	3
CS-120	Survey of Computing	4
SP-111	Public Speaking	4
WR-121	English Composition	4

<b>WINTER TERM</b>		<b>CREDITS</b>
CJA-120	Judicial Process	3
CJA-134	Correctional Institutions	3
HE-250	Personal Health	3
PSY-221	Introduction to Counseling	4
WR-122	English Composition	4

<b>SPRING TERM</b>		<b>CREDITS</b>
CJA-101	Criminology	3
CJA-203	Crisis Intervention	3
HE-205	Youth Addiction	3
MTH-050	Technical Mathematics I	
— or MTH-065	Algebra II	3-4
— —	Corrections program elective	3

**CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE:  
2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CJA-122	Criminal Law	3
CJA-223	Criminal Justice Ethics	3
CJA-232	Corrections Casework	3
PSY-101	Human Relations	3
— —	Corrections program elective	3

<b>WINTER TERM</b>		<b>CREDITS</b>
CJA-170	Careers in Criminal Justice Fields	3
CJA-201	Juvenile Delinquency	3
CJA-213	Interview & Interrogation	3
CJA-243	Narcotics & Dangerous Drugs	3
SOC-206	Institutions & Social Change	4

<b>SPRING TERM</b>		<b>CREDITS</b>
CJA-230	Juvenile Corrections	3
CJA-240	Cultural Diversity/Law Enforcement	3
CJA-280	Criminal Justice/Corrections/CWE	6
— —	Corrections program elective	3

*Minimum credits required for degree* 96-97

**CORRECTIONS PROGRAM ELECTIVES**

<b>COURSE</b>		<b>CREDITS</b>
CJA-112	Patrol Procedures	3
CJA-142	Statistics for Crime Analysis	1
CJA-200	Community Relations & Policing	3
CJA-210	Criminal Investigation I	3
CJA-211	Criminal Investigation II	3
CJA-212	Criminal Investigation III	3
CJA-220	Substantive Law	3
CJA-222	Procedural Law	3
CS-121	Computer Applications	3

**Corrections****■ Certificate**

The Corrections certificate program utilizes an interdisciplinary approach, including sociological, psychological and biological behavioral perspectives to provide students with a well-rounded basis for interacting with corrections clients in a variety of correctional settings.

Course work includes cooperative work experience, and hands-on experience in a correctional agency, to supplement and apply knowledge acquired in academic courses.

**PROGRAM OUTCOMES**

Successful completion of this certificate program should provide students with the skills and knowledge needed to qualify for an entry-level position in a state or local corrections system. Corrections professionals may also be qualified to move into other areas of law enforcement or social service.

**CAREERS**

Career opportunities may include correctional officer, work release counselor and corrections technician.

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

**JUVENILE CORRECTIONS**

See certificate program on page 56.

**CORRECTIONS CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
CJA-110	Introduction to Law Enforcement	3
CJA-130	Introduction to Corrections	3
CS -120	Survey of Computing	4
SP-111	Public Speaking	4

<b>WINTER TERM</b>		<b>CREDITS</b>
CJA-120	Judicial Process	3
CJA-134	Correctional Institutions	3
CJA-170	Careers in Criminal Justice Fields	3
HE-250	Personal Health	3
PSY-221	Introduction to Counseling	4
WR-121	English Composition	4

<b>SPRING TERM</b>		<b>CREDITS</b>
CJA-101	Criminology	3
CJA-203	Crisis Intervention	3
CJA-280	Criminal Justice/Corrections/CWE	3
MTH-050	Technical Mathematics I	
— or MTH-065	Algebra II	3-4
WR-122	English Composition	4

*Minimum credits required for certificate* 50-51

## Juvenile Corrections

### ■ Certificate

The Juvenile Corrections certificate is a one-year program developed in cooperation with the Oregon Youth Authority. Students are prepared to interview for an entry level position in a juvenile correctional facility. The certificate curriculum is challenging and is aimed at providing the skills most desired for working within the juvenile corrections system in Oregon.

Course work includes cooperative work experience, hands-on experience in a correctional agency enabling students to demonstrate the skills and knowledge acquired in the academic courses in a practical manner.

#### PROGRAM OUTCOMES

Program outcomes should include skills for employment in the juvenile justice system. Corrections professionals are usually qualified to move into other areas of law enforcement or social service.

#### CAREERS

Career opportunities are within secure facilities or in the community and may include youth correctional counselor, juvenile detention officer and group life coordinator.

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

#### JUVENILE CORRECTIONS CERTIFICATE

FALL TERM		CREDITS
CJA-232	Corrections Casework	3
CS-120	Survey of Computing	4
PSY-200	Psychology as a Natural Science	4
PSY-205	Psychology as a Social Science	4
WR-121	English Composition	4
WINTER TERM		
CJA-201	Juvenile Delinquency	3
HE-205	Youth Addiction	3
PSY-219	Introduction to Abnormal Psychology	4
SOC-205	Social Stratification & Social Systems	4
WR-122	English Composition	4
SPRING TERM		
CJA-101	Criminology	3
CJA-203	Crisis Intervention	3
CJA-230	Juvenile Corrections	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
PSY-215	Introduction to Developmental Psychology	4
ADDITIONAL REQUIREMENT		
CJA-170	Careers in Criminal Justice Fields	3
CJA-280	Criminal Justice/Corrections/CWE (can be taken Winter or Spring term)	3

Minimum credits required for certificate 59-60

## Criminal Justice

### ▲ Associate of Applied Science Degree

The course work for this two-year program is designed to develop students' knowledge and skills in the areas of law enforcement, courts and corrections. Areas emphasized include community policing, criminal investigation, routine patrol and criminological theory. Students gain an appreciation of the various parts of the criminal justice system and how they function as a whole. Students may enter this program any term.

The course work for this program includes cooperative work experience which affords the student opportunity for hands-on experience with many local, federal and state law enforcement agencies.

#### PROGRAM OUTCOMES

Program outcomes should include the skills necessary for entry-level employment with a local law enforcement agency, as well as other opportunities with federal and state agencies.

#### CAREERS

Career opportunities may include law enforcement officer at the local, state or national level, loss prevention officers and Homeland Security officers. Many departments require college course work or degrees in addition to civil service requirements.

For general information or information about transferring to a four-year institution contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

#### CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-112	Patrol Procedures	3
CJA-200	Community Relations & Policing	3
HE-250	Personal Health	3
WR-121	English Composition	4
WINTER TERM		
CJA-120	Judicial Process	3
CJA-130	Introduction to Corrections	3
CJA-213	Interview & Interrogation	3
SP-111	Public Speaking	4
WR-122	English Composition	4
SPRING TERM		
CJA-101	Criminology	3
CJA-201	Juvenile Delinquency	3
CJA-240	Cultural Diversity/Law Enforcement	3
HE-205	Youth Addiction	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4

Continued

## ODE CAREER LEARNING AREA

*Human Resources**Criminal Justice continued...***CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE:  
2ND YEAR**

FALL TERM		CREDITS
CJA-122	Criminal Law	3
CJA-210	Criminal Investigation I	3
CJA-223	Criminal Justice Ethics	3
CS-120	Survey of Computing	4
PSY-101	Human Relations	3
WINTER TERM		CREDITS
CJA-170	Careers in Criminal Justice Fields	3
CJA-211	Criminal Investigation II	3
CJA-220	Substantive Law	3
CJA-243	Narcotics & Dangerous Drugs	3
SOC-206	Institutions & Social Change	4
SPRING TERM		CREDITS
CJA-203	Crisis Intervention	3
CJA-212	Criminal Investigation III	3
CJA-222	Procedural Law	3
CJA-280	Criminal Justice/Corrections/CWE	6
WR-227	Technical Report Writing	4
<i>Minimum credits required for degree</i>		99-100

## Crime Analysis

**■ Certificate**

The course work for this one-year certificate program is designed to develop students' knowledge and skills in the area of crime analysis, as needed to assist in the investigation of crime and the administration of law enforcement. Areas emphasized include tactical crime analysis (as applied to crime patterns and series), strategic crime analysis (such as to investigate long-term criminal activities), and administrative crime analysis. Students may enter this program any term.

The course work for this program includes cooperative work experience which affords the student opportunity for hands-on experience with many local, federal and state law enforcement agencies.

**PROGRAM OUTCOMES**

Program outcomes should include the skills necessary for entry-level employment with a local law enforcement agency, as well as other opportunities with federal and state agencies.

**CAREERS**

Career opportunities may include law enforcement officer at the local, state, or national level, and non-sworn crime analyst at the local, state or national level. Many departments require college course work or degrees in addition to civil service requirements.

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

**CRIME ANALYSIS CERTIFICATE**

FIRST TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-112	Patrol Procedures	3
CJA-122	Criminal Law	3
CJA-140	Introduction to Crime Analysis	1
CJA-210	Criminal Investigation I	3
CS-120	Survey of Computing	4
SECOND TERM		CREDITS
CJA-141	Introduction to Crime Mapping	1
CJA-142	Statistics for Crime Analysis	1
CJA-170	Careers in Criminal Justice Fields	3
CJA-211	Criminal Investigation II	3
CS-121	Computer Applications	3
PSY-101	Human Relations	3
WR-121	English Composition	4
THIRD TERM		CREDITS
CJA-143	Crime Analysis and Statistical Analysis	1
CJA-144	Crime Analysis via Modus Operandi	1
CJA-145	Crime Analysis Capstone	1
CJA-146	Crime Analysis/Link Analysis	1
CJA-147	Profiling Violent Crimes	1
CJA-148	Crime Scene Analysis Profiling	1
CJA-149	Research Methods/Crime Analysis	1
CJA-150	Introduction to Police Intelligence	1
CJA-151	Crime Intelligence Analysis	1
CJA-152	Crime Scene Analysis Capstone	1
CJA-153	Crime Intelligence Analysis Capstone	1
CJA-280	Criminal Justice/Corrections/CWE	3
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II	3-4
<i>Minimum credits required for certificate</i>		52-53

**CRIME ANALYSIS PROGRAM ELECTIVES**

The following courses are electives that supplement the Crime Analysis certificate.

COURSE	CREDITS	
CJA-200	Community Relations & Policing	3
CJA-212	Criminal Investigation III	3

## Early Childhood Education & Family Studies

▲ Associate of Applied Science Degree

■ Certificate

This program provides a foundation in the ten core knowledge categories: Family & Community Systems; Diversity; Health, Safety & Nutrition; Human Growth & Development; Learning Environments and Curriculum; Observation & Assessment; Personal, Professional & Leadership Development; Program Management; Special Needs; and Understanding & Guiding Behavior (*The Oregon Registry, 2008*).

### PROGRAM OUTCOMES:

Upon satisfactory completion of the one year (four terms) coursework, students will have completed the education/training required for The Oregon Registry - Level 8 in early childhood care and education. Program outcomes should include the skills necessary for participants to become entry level early childhood practitioners in center and home based settings, private and public schools and child and family support agencies.

On completing the two year AAS in Early Childhood Education & Family Studies, students will have completed the education necessary to become in-charge practitioners in certain settings (e.g. private preschools and child development centers), paraeducators in public school settings (PK-4<sup>th</sup> Grade) or family support paraprofessionals in various child and family support agencies (public/private). Students will also qualify for Level 9 of The Oregon Registry.

### CAREERS:

After completing the two-year AAS in Early Childhood Education & Family Studies, students will be prepared to work in a variety of education and family support settings: in-charge teachers in private preschools/ kindergartens or teaching assistants (paraeducators) in public school settings (PK-4<sup>th</sup> Grade). Additionally, students will be prepared to work as family support personnel (e.g. family advocates, parent practitioners, family life paraprofessionals, etc.) in various education settings or child and family support agencies.

For information contact Patricia McIlveen, ext. 2240 or [patriciam@clackamas.edu](mailto:patriciam@clackamas.edu)

### EARLY CHILDHOOD EDUCATION & FAMILY STUDIES CERTIFICATE

#### SUMMER TERM

	CREDITS
MTH-050 Technical Mathematics I or MTH-065 Algebra II	3-4
WR-101 Communication Skills: Occupational Writing or WR-121 English Composition	3-4

#### FALL TERM

ECE-150 Introduction & Observation in Early Childhood Education	3
ECE-173 Preschoolers & Loss: Divorce & Death	1
ECE-235 Nutrition, Music & Movement	3
HDF-225 Prenatal, Infant & Toddler Development	3
HDF-260 Child Abuse & Neglect	3
— — PE/Health requirement (see page 21)	2-3

#### WINTER TERM

ECE-121 Observation & Guidance I in ECE Settings	4
ECE-154 Language & Literacy Development	3
ECE-209 Theory & Practicum	3
ECE-240 Lesson & Curriculum Planning	3
HDF-247 Preschool Child Development	3

#### SPRING TERM

ECE-179 Starting Points: The Oregon Registry	1
ECE-239 Helping Children & Families Cope w/Stress	3
ECE-280 Early Childhood Education/CWE	3
ED-258 Multicultural Education	3
HDF-140 Contemporary American Families	3
HE-261 Community/CPR (Includes Infant CPR)	1

*Minimum credits required for certificate*

51-54

### EARLY CHILDHOOD EDUCATION & FAMILY STUDIES ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### EARLY CHILDHOOD EDUCATION & FAMILY STUDIES ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

#### FALL TERM

	CREDITS
ECE-178 Designing a Learning Garden	1
ECE-221 Observation & Guidance II in ECE Settings	4
ED-100 Introduction to Education	3
ED-150 Creative Activities for Children	3
ED-270 Practicum I	4

#### WINTER TERM

ECE-185 Field Trips: Fun & Fascinating	1
ECE-289 The Project Approach in Early Childhood Education	1
ED-169 Overview of Students w/Special Needs	3
ED-271 Practicum II	4
HDF-141 Parent Child Relations I: Context & History	3
— — General electives (any college-level course)	6

#### SPRING TERM

ECE-186 Nature & Gardening With Preschoolers	1
ED-114 Instructional Strategies in Math & Science	3
ED-246 School, Family & Community Relations	4
ED-272 Practicum III	4

*Minimum credits required for degree*

96-99



## ODE CAREER LEARNING AREA

*Human Resources***Child Development Associate**● *Career Pathway Certificate**Pending State Approval***PROGRAM OUTCOMES:**

The 12 credits of education provides the necessary 120 clock hours of formal child care education (in eight subject areas) needed to meet the education requirements to obtain the nationally recognized CDA (Child Development Associate) credential.

Those subject areas are:

- 1 Planning a safe, healthy learning environment
- 2 Steps to advance children's physical and intellectual development
- 3 Positive ways to support children's social and emotional development
- 4 Strategies to establish productive relationships with families
- 5 Strategies to manage an effective program operation
- 6 Maintaining a commitment to professionalism
- 7 Observing and recording children's behavior
- 8 Principles of child development and learning

**CAREERS**

The Child Development Associate (CDA) credential is a nationally recognized assessment system of standards that defines, acknowledges and evaluates the competency of the ECE practitioner, which in turn helps enhance the quality of early childhood care and education settings. In Oregon, the CDA may be an in-charge early childhood care and education practitioner in family based settings, as well as in certain child development centers. At Clackamas, we offer this certificate of completion that acts as an initial pathway to obtaining first the CDA credential and then either the one year certificate and/or two-year AAS degree in Early Childhood & Family Studies.

For more information contact Patricia McIlveen, ext. 2240 or [patriciam@clackamas.edu](mailto:patriciam@clackamas.edu)

**CHILD DEVELOPMENT ASSOCIATE CAREER PATHWAY CERTIFICATE**

COURSES		CREDITS
ECE-130	Introduction to CDA	1
ECE-131	Physical Activity/Movement in ECE Programs	1
ECE-132	Positive Child Guidance in ECE	1
ECE-133	Infant-Toddler Development	1
ECE-134	Health & Safety Issues in ECE	1
ECE-135	Self-Esteem in the ECE Classroom	1
ECE-136	Observing & Recording Children's Behavior	1
ECE-137	Developing the Classroom Environment	1
ECE-138	Family-School Relationships	1
ECE-139	Program Management in ECE	1
ECE-140	Preschool Development	1
ECE-141	Children Learning Outdoors	1
<i>Minimum credits required for certificate</i>		12

**Child & Family Studies**● *Career Pathway Certificate**Pending State Approval***PROGRAM OUTCOMES:**

Outcomes include obtaining the education and skills necessary for participants to become entry level family support paraprofessionals in both the early childhood care and education field and at various child and family support agencies.

**CAREERS:**

After completing the Child & Family Studies Certificate, the students will be prepared for entry level work in a variety of education and family support settings, including classroom support personnel in private preschools/kindergartens, or as paraprofessionals in various child and family support agencies, (e.g. supporting family advocates, parent and family life practitioners, etc.)

For more information contact Patricia McIlveen, ext. 2240 or [patriciam@clackamas.edu](mailto:patriciam@clackamas.edu)

**CHILD & FAMILY STUDIES CAREER PATHWAY CERTIFICATE**

COURSES		CREDITS
HDF-140	Contemporary American Families	3
HDF-141	Parent Child Relations I: Context & History	3
HDF-225	Prenatal, Infant & Toddler Development	3
HDF-247	Preschool Child Development	3
HDF-260	Child Abuse & Neglect	3
HDF-280	Child & Family Studies/CWE	
or ECE-280	Early Childhood Education/CWE	4
ECE-121	Observation & Guidance I in ECE Settings	4
SOC-205	Social Stratification and Social Systems	3-4
	or General Elective (any college level course)	

*Minimum credits required for certificate*

26-27

## Emergency Management

### ▲ Associate of Applied Science Degree

Emergency Management course work prepares a student to make decisions, problem solve, communicate effectively and coordinate all sources necessary for preparedness, mitigation, response and recovery for any possible emergency or disaster. A program description and list of approved courses can be found on the Criminal Justice/ Emergency Management website: <http://depts.clackamas.edu/crimjust/intro.htm>

#### PROGRAM OUTCOMES

Successful completion of this degree program should enable students to demonstrate the entry-level skills needed to acquire positions within public or private sector agencies responsible for preparedness planning and managing of any type of life-threatening disaster.

#### CAREERS

Career opportunities may include local emergency manager, FEMA worker, public safety manager, Homeland Defense Agency worker and risk assessment manager.

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

## Human Resource Management

### ■ Certificate

This certificate is recommended for students and/or professionals currently working in the human resource field who wish to obtain national certification in Professional in Human Resources (PHR) from the Human Resource Certification Institute. Though this certificate is intended to enhance the qualifications of people already working in the human resource field, others may wish to take the classes to advance their own skills and knowledge.

#### PROGRAM OUTCOMES

Successful completion of this program should qualify the applicant to sit for the human resource certificate exam; two years experience is also required before the certificate is issued to the successful applicant. Certification in Human Resource Management, along with experience and qualifications required by employers, include the skills necessary to be an employee, management trainee or manager in the human resource management field.

#### CAREERS

Career opportunities may include human resource manager, human resource generalist, human resource specialist, human resource assistant, and information and records clerk.

For information contact Bill Waters, ext. 5062 or [billw@clackamas.edu](mailto:billw@clackamas.edu)

### HUMAN RESOURCE MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-111	General Accounting I	4
BA-224	Human Resource Management	4
BA-226	Business Law I	4
WR-101	Communication Skills: Occupational Writing	3
WINTER TERM		
BA-177	Payroll Accounting	3
BA-206	Management Fundamentals	4
BA-208	Employee Labor Relations	4
BA-285	Human Relations in Business	4
MTH-050	Technical Mathematics I	3
SPRING TERM		
BA-205	Solving Communication Problems w/Technology	4
BA-217	Budgeting for Managers	3
BA-229	Employment Law	4
BA-254	Basic Compensation and Benefits	4
BA-280	Business/CWE	3
<i>Minimum credits required for certificate</i>		55

## Human Resource Management Essentials

### ● Career Pathway Certificate

This program is designed for students who either are currently employed in or desire to be employed in Human Resource Management (HRM), and who lack formal education in Human Resource Management laws and processes. The classes provided in this pathway certificate form the foundation for work as a Human Resource Manager or for future education in the discipline.

#### PROGRAM OUTCOMES

The HRM Essentials Career Pathway Certificate program at Clackamas Community College should prepare students to begin their careers in Human Resource Management and to continue their education in management. For students already employed in this field, the program will provide a foundation for career growth.

#### CAREERS

Careers includes human resource specialists, human resource generalists, and human resource assistants.

For more information contact Bill Waters, ext. 5062 or [billw@clackamas.edu](mailto:billw@clackamas.edu)

### HUMAN RESOURCE MANAGEMENT ESSENTIALS CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-224	Human Resource Management	4
BA-229	Employment Law	4
BA-254	Basic Compensation and Benefits	4
BA-285	Human Relations in Business	4
<i>Minimum credits required for certificate</i>		16

## ODE CAREER LEARNING AREA

*Human Resources**Human Services*▲ *Associate of Applied Science Degree*

The two-year Human Services program offers training for entry-level positions in social service agencies. The degree combines academic course work with 12-14 credits of supervised field experience. In addition to general course work in human services and social sciences, students may select one or more Focus Areas for more concentrated preparation.

**PROGRAM OUTCOMES**

The Human Services degree provides training in skills such as interviewing clients, assessing assets and barriers to optimal client functioning, recognizing signs of major psychological and substance abuse disorders, understanding of service organizations; providing information and referral to community resources, facilitating workshops which teach basic personal and employment skills, and participating in the development and delivery of human services in public and private human service agencies.

**CAREERS**

Career opportunities include positions such as case managers and assistants, resource specialists, training and employment specialists, client advocates, activity directors, job and work experience site developers, program assistants, intake workers, and volunteer coordinators.

For information contact Mindy Brown, ext. 2250 or [mindyb@clackamas.edu](mailto:mindyb@clackamas.edu)

**HUMAN SERVICES ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
CS-120	Survey of Computing	4
HS-100	Introduction to Human Services	3
HS-154	Community Resources	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
HS-156	Interviewing Theory and Techniques	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
— —	Human Services program elective	3
SPRING TERM		
HE-261	Community CPR	1
HS-170	Preparation for Field Experience in Human Services	3
SOC-205	Social Stratification and Social System	4
— —	Human Services program elective	3-4
— —	Focus Area	3-4

**HUMAN SERVICES ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
HE-151	Body and Drugs I	3
HS-280	Human Services Generalist I/CWE	4
— —	Human Services program electives	6-8
— —	Focus Area	3-4
WINTER TERM		
HE-152	Body and Drugs II	3
HS-260	Victim Advocacy and Assistance	
or HDF-260	Understanding Child Abuse & Neglect	3-4
HS-281	Human Services Generalist II/CWE	4
PSY-221	Introduction to Counseling	4
— —	Focus Area	3-4
SPRING TERM		
HS-267	Intervention Strategies Working with Families	4
HS-282	Human Services Generalist III/CWE	4
SP-140	Introduction to Intercultural Communication	
or ED-258	Multicultural Education	3-4
— —	Human Services program elective	3-4
— —	Focus Area	3-4
<i>Minimum credits required for the degree</i>		94-106

**HUMAN SERVICES FOCUS AREA**

Students must complete a minimum of 12 credits from one of the following focus areas:

**GERONTOLOGY FOCUS AREA**

COURSE	CREDITS	
HS-130	Introduction to Hospice Care	3
GRN-181	Issues in Aging	4
GRN-182	Aging & the Body	4
GRN-183	Death & Dying	4
GRN-184	Aging & the Individual	4

**CAREER DEVELOPMENT FACILITATOR FOCUS AREA**

COURSE	CREDITS	
HS-217	Helping Skills & Diverse Populations	2
HS-218	Career Development Models & Assessments	2
HS-219	Training Clients/Peers & Employability Skills	2
HS-220	Labor Market Information & Technology In Career Planning	2
HS-221	Ethics & Consultation	2
HS-222	Program Management & Public Relations	2

**HUMAN SERVICES PROGRAM ELECTIVES**

Students must complete a minimum of 15 elective credits from the following subject areas:

- Business Administration (BA)
- Criminal Justice (CJA)
- Early Childhood Education (ECE)
- Education (ED)
- Emergency Medical Technology (EMT)
- Medical Assistant (MA)

Transfer Option: With the approval of their Human Services Program Advisor, students planning to transfer to a four-year institution may use some of their general education requirements to meet the elective requirements for the A.A.S. in Human Services.

**HUMAN SERVICES TRANSFER REQUIREMENTS**

COURSE		CREDITS
MTH-105	Introduction to Contemporary Math (or higher)	4-5
WR-122	English Composition	4
WR-123	English Composition	
	or WR-227 Technical Report Writing	3-4

Select 12 or more credits from the following prefixes:

ASC, BI (except BI-055, BI-163), BOT, CH (except CH-150), ESR, G (except G-119, G-124), GS (except GS-160), PH, Z

**Career Development Facilitator**

● **Career Pathway Certificate**

The Career Development Facilitator Career Pathway Certificate is designed for individuals who are working in the field of career development and/or career advancement. This certificate can also serve as a step toward earning a Global Career Development Facilitator Credential which is endorsed by the National Career Development Association.

**PROGRAM OUTCOMES**

Upon completion of the program, students are expected to possess the skills and knowledge to assist others in identifying and exploring career options, researching occupational information, making career decisions, implementing action plans, and conducting effective job searches.

**CAREERS**

Career development facilitator training can enhance the skills of many careers including human service providers, educators, training and development specialists, and human resource professionals. Career development facilitators may serve as school-to-work coordinators, work force development personnel, case managers, job search and career workshop facilitators, career coaches, intake interviewers, career resource specialists, and employment/placement specialists.

For information contact David Blessman, ext. 2232 or davidb@clackamas.edu

**CAREER DEVELOPMENT FACILITATOR CAREER PATHWAY CERTIFICATE**

FIRST TERM		CREDITS
HS-217	Helping Skills and Diverse Populations	2
HS-218	Career Development Models and Assessments	2
<b>SECOND TERM</b>		
HS-219	Training Clients/Peers and Employability Skills	2
HS-220	Labor Market Information and Technology in Career Planning	2
<b>THIRD TERM</b>		
HS-221	Ethics and Consultation	2
HS-222	Program Management and Public Relations	2
— —	Career Development Facilitator program electives or general elective (any college-level course)	3-4
<i>Minimum credits required for certificate</i>		15-16

**CAREER DEVELOPMENT FACILITATOR PROGRAM ELECTIVES**

COURSE		CREDITS
HS-154	Community Resources	3
HS-260	Victim Advocacy & Assistance	4
HS-280	Human Services Generalist I/CWE	4

**Paraeducator**

■ **Certificate**

The Paraeducator certificate is designed for those who would like to work as instructional assistants in educational settings. The certificate prepares students to resolve everyday challenges and to professionally support teachers in planning, presenting and evaluating instruction and learning. The paraeducator's responsibilities may include assisting small group instruction in reading, math, spelling, assisting individual students in the above academic areas and self-help skills, daily living skills, following behavior programs as directed by the teacher, and preparing and assembling materials. The particular responsibilities assigned to a paraeducator (instructional assistant) depend on the program and personnel in each school. Employment opportunities exist in surrounding areas as a result of the present legislative support for equal education for students with special needs. The program is designed for persons of all ages, races, cultures and economic backgrounds. The program values and encourages diversity in the field of education.

Course work provides a basic foundation in theory and practical application in how children learn, teaching strategies, developing positive relationships with students, integrating current technology into the learning environment, addressing the needs of special-needs students and the role of the classroom in a multicultural society.

Course work includes Related Instruction requirements, cooperative work experience and core courses in education, many of which are offered online to meet the needs of currently employed teacher assistants and students exploring educational careers.

The *No Child Left Behind Act* of 2002 now mandates that paraeducators who work in Title I schools have two years of college, an associate's degree, or pass a competency test equivalent to sophomore level course work in reading, writing, math and teaching strategies.

*Continued*

## ODE CAREER LEARNING AREA

*Human Resources**Paraeducator continued...***PROGRAM OUTCOMES**

Completion of the State approved CCC Paraeducator Certificate provides more than half the necessary credits for the associate's degree as well as a strong foundation in education and teaching. Completion of the remaining degree requirements should include the knowledge and skills necessary to work as a teacher assistant in a variety of public and private elementary and secondary school settings.

**PORTLAND STATE UNIVERSITY TRANSFER AGREEMENT**

Portland State University will accept the CCC Paraeducator Certificate as part of a 90 credit Associate of General Studies. Talk with a staff member in the Advising & Counseling Center at CCC, or Paula Hamm at ext. 2804 for requirements.

**CAREERS**

Career opportunities may include paraeducator positions in public or private elementary or secondary schools.

For information contact Paula Hamm, ext. 2804 or paulah@clackamas.edu

**PARAEDUCATOR CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-121	Computer Applications	3
ED-100	Introduction to Education	3
ED-131	Instructional Strategies	3
ED-229	Learning and Development	3
<b>WINTER TERM</b>		
ED-113	Instructional Strategies in Reading and Language Arts	3
ED-169	Overview of Students with Special Needs	3
ED-200	Foundations of Education	3
ED-280	Practicum/CWE	3-6
<b>SPRING TERM</b>		
ED-114	Instructional Strategies in Math and Science	3
ED-130	Comprehensive Classroom Management	3
ED-254	Instructional Strategies for English Language Learners	3
ED-258	Multicultural Education	3
<b>SUMMER TERM</b>		
ED-235	Educational Technology	3
MTH-065	Algebra II	4
RD-090	Intermediate Reading Skills*	3
WR-121	English Composition	4
<i>Minimum credits required for certificate</i>		50-53

\*The reading requirement may be challenged in the testing center.



ODE CAREER LEARNING AREA  
**Industrial & Engineering Systems**

- 67 *Automotive Service Technology AAS Degree*
- 68 *CAD/CAM Technology AAS Degree*
- 69 *Collision Repair and Refinishing Technology AAS Degree*
- *Collision Repair and Refinishing Technology Career Pathway Certificate*
- 70 *Construction Trades: General Apprenticeship AAS Degree*
- *Construction Trades: General Apprenticeship Certificate*
  - *Construction Trades: Manual Trades Certificate*
- 71 *Electrician Apprenticeship Technologies*
- *Electrician Apprenticeship Technologies*
  - *Limited Electrician Apprenticeship Technologies*
- 71 *Electronics Systems Technology AAS Degree*
- *Electronics Systems Technology Certificate*
- 72 *Energy & Resource Management AAS Degree*
- *Energy & Resource Management Certificate*
  - *Utility Workforce Readiness Career Pathway Certificate*
- 74 *Fire Science (Wildland) AAS Degree*
- *Fire Science (Wildland) Certificate*
  - *Wilderness Survival and Leadership Career Pathway Certificate*
- 75 *Manufacturing Technology AAS Degree*
- *Manufacturing Technology Certificate*
  - *CNC Machining Technician Career Pathway Certificate*
- 77 *Microelectronics Systems Technology AAS Degree*
- *Microelectronics Systems Technology Certificate*
- 78 *Network & Microcomputer Specialist AAS Degree*
- *Network & Microcomputer Specialist Certificate*
- 79 *Professional Truck Driver Certificate*
- 80 *Welding Technology AAS Degree*
- *Welding Technology Certificate*
  - *Entry Level Welding Technician Career Pathway Certificate*

## Automotive Service Technology

▲ *Associate of Applied Science Degree*

\* *Professional Upgrade*

The program focuses on the repair and maintenance of passenger cars and light trucks. Course work includes cooperative work experience working for a local employer. Those who wish to specialize may take advanced mechanic studies courses for more in-depth experience. Students may enter the program any term.

### PROGRAM PREREQUISITES

MTH-020 Fundamentals of Arithmetic or equivalent competency and RD-090 Intermediate Reading Skills or equivalent competency.

### AUTOMOTIVE TECHNICIAN'S INTERNSHIP PROGRAM

Clackamas Community College and the Northwest Automotive Trades Association co-sponsor the Automotive Technician's Internship Program (ATIP) training program. The program serves a limited number of CCC students each year.

### TOYOTA "T-TEN" INTERNSHIP PROGRAM

Students sponsored by a dealer attend Clackamas the first year and transfer to Umpqua or Clark for the completion of the course work. Clackamas Community College, in cooperation with Umpqua Community College and Clark College, provide a Toyota dealership internship program.

### PROGRAM OUTCOMES

Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including repairing air conditioning systems, engine and transmission rebuilding, front-end repair and alignment, brake service, starting and charging system repair and the diagnosis and repair of electronic engine controls and safety systems.

### CAREERS

Career opportunities may include: automotive service mechanic/technician, recreational vehicle service technician and truck service mechanic/technician.

For information contact the Automotive Department, ext. 2354.

### PROFESSIONAL TRUCK DRIVER

See certificate program on page 68.

### AUTOMOTIVE SERVICE TECHNOLOGY ASSOCIATE OF APPLIED

*Continued*

ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

*Automotive Service Technology continued...*

**SCIENCE DEGREE: 1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
AM-121	General Auto Repair I	3
AM-133	Engine Systems	7
MFG-109	Computer Literacy for Technicians	3
— —	Human Relations requirement (see page 21) (Recommended: PSY-101 or SP-100)	3
<b>WINTER TERM</b>		
AM-122	General Auto Repair II	3
AM-129	Electrical Systems	7
MTH-050	Technical Mathematics I or MTH-065 Algebra II	3-4
<b>SPRING TERM</b>		
AM-123	General Auto Repair III	3
AM-131	Chassis Systems	7
WR-101	Communication Skills: Occupational Writing or WR-121 English Composition	3-4

**AUTOMOTIVE SERVICE TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
AM-235	Power Transmission Systems	7
AM-245	Automatic Transmission Systems	7
— —	PE/Health requirements (see page 21) (Recommended: HE-252)	3
<b>WINTER TERM</b>		
AB-112	Collision Repair Welding I or WLD-102 Introduction to Welding	2
AM-130	Brake Systems	7
AM-243	Fuel & Emission Control Systems	7
<b>SPRING TERM</b>		
AM-224	Comfort Systems	4
AM-228	Service Shop Management	4
AM-244	Advanced Electrical & Fuel Systems	7
AM-280	Auto Mechanics/CWE	6
<i>Minimum credits required for degree</i>		96-98

Note: Alternative course schedule is available. Contact the Autotive Department, ext. 2354 for information.

## CAD/CAM Technology

### ▲ Associate of Applied Science Degree

This program combines training in computer-aided drafting (CAD) and computer-aided manufacturing (CAM). Course work emphasizes machine tool fundamentals, computer numerical control (CNC) and computer-aided manufacturing.

#### PROGRAM OUTCOMES

Program outcomes include entry-level skills for employment as a CNC/CAD/CAM or manufacturing technician to provide a company with the needed computer-aided manufacturing support. The technician's training involves the skills to support initial product design through manufacturing, including design principles, print-reading, solid modeling, CNC machine tool operations and related mathematics.

#### CAREERS

Career opportunities may include CNC programmer and operator, CAD technician, manufacturing engineering technician and CAD/CAM technician. For information contact Mike Mattson, ext. 2483, or mattsonm@clackamas.edu

#### MANUFACTURING ENGINEERING TECHNOLOGY

(OIT transfer courses)

The CCC Manufacturing Technology Department, in partnership with Oregon Institute of Technology (OIT), offers a significant number of transferable classes into OIT's Manufacturing Engineering Technology degree program. Contact the Manufacturing Department for more information, ext. 2483.

#### CAD/CAM TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

<b>FIRST TERM</b>		<b>CREDITS</b>
CDT-102	Sketching and Problem Solving	3
CDT-108A	Introduction to SolidWorks	3
MFG-104	Print Reading	2
MTH-050**	Technical Mathematics I	3
WR-101**	Communication Skills: Occupational Writing	3
<b>SECOND TERM</b>		
CDT- 223	Inventor Fundamentals or CDT-225 Advanced SolidWorks	3
MFG-105	Dimensional Inspection	2
MFG-109	Computer Literacy for Technicians	3
MFG-111	Machine Tool Fundamentals I	6
MTH-080**	Technical Mathematics II	3

**THIRD TERM**

MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	6
MFG-221	Materials Science	3
MTH-085**	Technical Mathematics III	3

**CAD/CAM TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

**FOURTH TERM**

MFG-113	Machine Tool Fundamentals III	6
MFG-201	CNC I: Set-up & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
— —**	Human Relations requirement (see page 21)	3

**FIFTH TERM**

MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-209	Programming and Automation for Manufacturing	3
— —	PE/Health requirement (see page 21)	3

**SIXTH TERM**

MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	3
MFG-211	Machine Tool Fundamentals IV	6
MFG-280	Manufacturing Technology/CWE	4
<i>Minimum credits required for degree</i>		93

Students with specialized job training needs may be eligible to substitute some classes. Consult your instructor or the department chair for more information.

\*\*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

## Collision Repair and Refinishing Technology

### ▲ Associate of Applied Science Degree

The collision repair and refinishing program at Clackamas simulates real working conditions in a well equipped modern shop facility. Training combines intensive theory and practical lab experience tailored to specific needs. Course work includes one term of cooperative work experience with a local employer. The flexibility of the program allows students to enter any term and proceed at their own pace.

Technicians repair or replace parts, straighten structure, install and adjust glass and components, repair electrical systems, restraints, suspension components, brakes, prepare all types of surfaces for necessary refinishing operations, mix and apply modern urethane and waterborne paint products, and finish their work to industry standards. Skills learned include welding, metal straightening, filler use, plastic repair, surface preparation, masking, product selection, mixing, color matching and application techniques, as well as detailing and troubleshooting.

**PROGRAM OUTCOMES**

Program Outcomes include entry level skills for employment in Collision Repair and Refinishing, from repair and replacement of body panels on full frame and unibody vehicles, to preparation and finish application. Detailing, customer service, shop safety, and environmental concerns will also be covered.

**CAREERS**

Employment opportunities may include auto body technician, frame technician, auto body mid-tech, painters helper, painter, estimator or manager in an independent repair shop, automobile dealership, truck or heavy equipment dealer or service center, or sales of auto body related tools and materials.

**COLLISION REPAIR AND REFINISHING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FIRST TERM	CREDITS
AB-112 Collision Repair Welding I	2
AB-113 Collision Repair I/Nonstructural	6
ABR-125 Collision Repair Refinishing I	6
MTH-050 Technical Mathematics I	
or MTH-065 Algebra II	3-4

**SECOND TERM**

AB-123 Collision Repair Welding II	2
AB-133 Collision Repair II/Structural	6
ABR-127 Collision Repair Refinishing II*	6

**THIRD TERM**

AB-222 Collision Repair III/Advanced Structural	6
ABR-129 Collision Repair Refinishing III	6
— — Human Relations requirement (see page 21)	
(Recommended: SP-100 or PSY-101)	3

**COLLISION REPAIR AND REFINISHING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FOURTH TERM	CREDITS
AB-149 Collision Repair Estimating I	2
AB-224 Collision Repair IV/Advanced Structural	6
ABR-225 Production Shop Techniques	6
— — PE/Health requirement (see page 21)	
(Recommended: HE-252)	3

**FIFTH TERM**

AB-150 Collision Repair Computerized Estimating-Shoplink2	2
AB-226 Collision Repair V/Advanced Structural	6
AB-235 Collision Repair Welding III	2
ABR-227 Restoration Practices	6

**SIXTH TERM**

AB-151 Collision Repair Computerized Estimating-Pathways	2
AB-280 Collision Repair/CWE	6
ABR-152 Custom Painting Fundamentals	2
WR-101 Communication Skills: Occupational Writing	
or WR-121 English Composition	3-4
<i>Minimum credits required for degree</i>	
	92-94

\* Program requirements: Current enrollment in or successful completion of AB-112 Collision Repair Welding I and ABR-125 Collision Repair Refinishing I must be completed or in current progress prior to enrolling in ABR-127 Collision Repair Refinishing

ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

## *Collision Repair and Refinishing Technology*

### ■ Certificate

The Collision Repair and Refinishing Technology program at Clackamas simulates real working conditions in a well-equipped modern shop facility. Training combines intensive theory and practical lab experience tailored to specific needs. In order to complete the course in three consecutive terms, students must start fall term.

Technicians repair or replace parts, straighten frames and unibody structure, install and adjust components and glass, repair electrical systems, restraints, suspension components, brakes, prepare all types of surfaces for necessary refinishing operations, mix and apply modern waterborne and solvent-borne paint products, and finish their work to industry standards. Skills learned include welding, metal straightening, filler use, plastic repair, surface preparation, masking, product selection, mixing, color matching and application techniques, as well as detailing and troubleshooting. This certificate qualified students to apply for an I-CAR Core Area Certification.

### PROGRAM OUTCOMES

The Pathway Certificate focused program will provide entry level skills for employment in Collision Repair and Refinishing, from replacement or repair of body panels on unibody and full frame vehicles, to preparation and finish application. Detailing, customer service, safety and environmental concerns will also be covered.

### CAREERS

Employment opportunities may include entry level positions as a prepper, masker, painter's helper, body mid-tech, paint or body technician at independent, dealership, or fleet repair facilities in any transportation related field: automotive, trucking, transit, light rail, aircraft, recreational vehicle, industrial or marine.

### COLLISION REPAIR AND REFINISHING CAREER PATHWAY CERTIFICATE OF COMPLETION

FIRST TERM		CREDITS
AB-112	Collision Repair Welding I	2
AB-113	Collision Repair I/Nonstructural	6
AB-149	Collision Repair Estimating I	2
ABR-125	Collision Repair Refinishing I	6
SECOND TERM		
AB-123	Collision Repair Welding II	2
AB-133	Collision Repair II/ Structural	6
AB-150	Collision Repair Computerized Estimating-Shoplink2	
ABR-127	Collision Repair Refinishing II*	6

### THIRD TERM

AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
<i>Minimum credits required for certificate</i>		<i>44</i>

\* Program requirements: Current enrollment in or successful completion of AB-112 Collision Repair Welding I and ABR-125 Collision Repair Refinishing I must be completed or in current progress prior to enrolling in ABR-127 Collision Repair Refinishing II.

## *Construction Trades: General Apprenticeship*

### ▲ Associate of Applied Science Degree

### ■ Certificate

#### *Pending State Approval*

Clackamas Community College offers courses for registered apprentices or those interested in becoming an apprentice. For an apprentice who has attained journey status, you may be able to use your journeyman card to receive credit toward an Associate of Applied Science degree.

In order to take apprenticeship training classes, students need to first be accepted into the apprenticeship program by the Joint Apprenticeship Training Council (JATC) for that particular trade. The first step for anyone interested in an apprenticeship program is to logon to [http://egov.oregon.gov/B\\_OLIA/ATD/A\\_Atdopen.shtml](http://egov.oregon.gov/B_OLIA/ATD/A_Atdopen.shtml) and click on the area in which you are interested in applying (Portland, Salem, Eugene, etc.).

The Apprenticeship pathway model provides statewide transfer opportunities, ladder-type certificates of completion, and an optional transfer path into Bachelor of Science degrees at the Oregon Institute of Technology. Both certificates of completion and the AAS degree are based on Oregon State Apprenticeship Training Council and local Joint Apprenticeship Training Committee related training (trade specific) standards. The statewide certificates of completion and AAS degree provide additional access to related training courses across the state for registered apprentices and aligned program outcomes, assessments, and courses.

For information contact Paul Wanner, ext. 2691 or [paulw@clackamas.edu](mailto:paulw@clackamas.edu); Connie Hetterly, ext. 2689 or [connieh@clackamas.edu](mailto:connieh@clackamas.edu)

**PROGRAM OUTCOMES**

The statewide certificates of completion and Associate of Applied Science (AAS) credentials are available in the following areas:

*Construction Trades, General*

- Manual Apprenticeship Trades Certificate of Completion
- General Apprenticeship Certificate of Completion
- General Apprenticeship Associate of Applied Science (AAS)
- Optional transfer path into a Bachelor of Science degree in Operations Management at the Oregon Institute of Technology

## Electrician Apprenticeship Technologies

▲ Associate of Applied Science Degree

■ Certificate

*Pending State Approval*

Clackamas Community College offers courses for registered apprentices or those interested in becoming an apprentice. For an apprentice who has attained journey status, you may be able to use your journeyman card to receive credit toward an Associate of Applied Science degree.

In order to take apprenticeship training classes, students need to first be accepted into the apprenticeship program by the Joint Apprenticeship Training Council (JATC) for that particular trade. The first step for anyone interested in an apprenticeship program is to logon to [http://egov.oregon.gov/B\\_OLI/ATD/A\\_Atdopen.shtml](http://egov.oregon.gov/B_OLI/ATD/A_Atdopen.shtml) and click on the area in which you are interested in applying (Portland, Salem, Eugene, etc.).

The Apprenticeship pathway model provides statewide transfer opportunities, ladder-type certificates of completion, and an optional transfer path into Bachelor of Science degrees at the Oregon Institute of Technology. Both certificates of completion and the AAS degree are based on Oregon State Apprenticeship Training Council and local Joint Apprenticeship Training Committee related training (trade specific) standards. The statewide certificates of completion and AAS degree provide additional access to related training courses across the state for registered apprentices and aligned program outcomes, assessments, and courses.

For information contact Paul Wanner, ext. 2691 or [paulw@clackamas.edu](mailto:paulw@clackamas.edu); Connie Hetterly, ext. 2689 or [connieh@clackamas.edu](mailto:connieh@clackamas.edu)

**PROGRAM OUTCOMES**

The statewide certificates of completion and Associate of Applied Science (AAS) credentials are available in the following areas:

*Electrician*

- Limited Electrician Apprenticeship Technologies Certificate of Completion
- Electrician Apprenticeship Technologies Certificate of Completion
- Electrician Apprenticeship Technologies Associate of Applied Science (AAS)
- Optional transfer path into a Bachelor of Science degree in Operations Management at the Oregon Institute of Technology

## Electronics Systems Technology

▲ Associate of Applied Science Degree

■ Certificate

\* Professional Upgrade

Program course work focuses on a traditional electronics foundation, including a basic electronics series, digital logic series, a troubleshooting series, a physics series and a semiconductor linear circuit series. The degree focuses on electronics and engineering design principles and electronics systems and is taught in a team environment whenever possible.

Specific skill areas for the Electronics Systems Technology degree include test equipment use, computer use, problem-solving, teamwork, understanding math and electronics fundamentals and writing and oral communication.

**PROGRAM OUTCOMES**

Program outcomes include the knowledge and skills for entry-level employment as a technician in a wide variety of industries, such as circuit board manufacturing, medical electronics manufacturing and electronic equipment manufacturing and service.

**CAREERS**

Career opportunities may include engineering technician, manufacturing equipment technician, field services technician and operators and processors with large and small employers in high-tech industries.

For information contact Mike Mattson, ext. 2483 or [mattsonm@clackamas.edu](mailto:mattsonm@clackamas.edu)

*Continued*



ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

*Electronics Systems Technology continued...*

**ELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE**

<b>FIRST TERM</b>	<b>CREDITS</b>
EET-112 Electronic Test Equipment & Soldering	3
EET-137 Electrical Fundamentals I	4
EET-139 Principles of Troubleshooting I	2
MTH-095 Algebra III	4
SM-150 Semiconductor Processing I	2
WR-101* Communication Skills: Occupational Writing	3
<b>SECOND TERM</b>	
EET-141 Electrical Fundamentals II	4
EET-157 Digital Logic I	3
MFG-109 Computer Literacy for Technicians	3
MTH-111 College Algebra	5
— — Human Relations requirement (see page 21)	3
<b>THIRD TERM</b>	
EET-127 Semiconductor Circuits I	4
EET-142 Electrical Fundamentals III	4
EET-257 Digital Logic II	4
MTH-112 Trigonometry/Pre-Calculus	5
SM-280 Electronics & Microelectronics/CWE	2
<i>Minimum credits required for certificate</i>	55

**ELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

Complete certificate program.

**ELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

<b>FOURTH TERM</b>	<b>CREDITS</b>
EET-215 Principles & Applications of Manufacturing Equipment Technology I	2
EET-227 Semiconductor Circuits II	3
EET-239 Principles of Troubleshooting II	2
MFG-107 Industrial Safety & First Aid	3
PH-201** General Physics	5
<b>FIFTH TERM</b>	
EET-250 Linear Circuits	3
EET-252 Control Systems	3
EET-254 Introduction to Microcontrollers	4
MFG-209 Programming & Automation for Manufacturing	3
PH-202** General Physics	5
<b>SIXTH TERM</b>	
EET-230 Laser and Fiber Optics	3
MFG-133 Programmable Logic Controllers	3
PH-203** General Physics	5
SM-280 Electronics & Microelectronics/CWE	2
— — PE/Health requirement (see page 21)	3
<i>Minimum credits required for degree</i>	104

\*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

\*\*The Physics with Calculus series PH-211/212/213 may be substituted.

**ELECTRONICS ENGINEERING TECHNOLOGY**  
(OIT Transfer Courses)

The CCC Manufacturing Technology Department, in partnership with Oregon Institute of Technology (OIT), offers a number of transferable classes into OIT's Electronics Engineering Technology degree program.

Contact Mike Mattson at 503-657-6958, ext. 2483 or mattsonm@clackamas.edu for more information.

## Energy & Resource Management

▲ Associate of Applied Science Degree

■ Certificate

The Energy & Resource Management (ERM) program provides the necessary training for entry level careers within the utility industry. Course work covers traditional and alternative energy generation, distribution, operation, management and leadership.

This program is endorsed by the Utility Training Alliance (UTA) comprised of Portland General Electric, PacifiCorp and Clackamas Community College. It is also endorsed by the Utility Education Training Alliance (UETA) that is comprised of various utilities and community colleges throughout Oregon and Washington.

**PROGRAM OUTCOMES**

Successful completion of this program should enable students to demonstrate the core knowledge and skills needed to acquire entry level positions within the utility industry.

Students can also earn a Project Management/Leadership & Communication Career Pathway Certificate (see page 70) with the successful completion of second year and applying with a separate petition for graduation.

**CAREERS**

Career opportunities may include: entry-level applied technical trades within utilities, support personnel, utilities assistant, engineering consulting, resource specialist, business administration and project management.

For information contact Shelly Tracy, 503-594-0945 or shellyt@clackamas.edu

**UTILITY WORKFORCE READINESS**

See Career Pathway Certificate program on page 72.

**PSU TRANSFER AGREEMENT**

Graduates from CCC's Energy & Resource Management AAS degree will transfer with a minimum of 90 credits to Portland State University's *Community Development in CUPA* major with the following understanding: Transfer students will contact a PSU transfer advisor, Undergraduate Advising and Support Center (UASC), 1-800-8887, ext. 4005.

**ENERGY & RESOURCE MANAGEMENT CERTIFICATE:**

FIRST TERM		CREDITS
BA-131	Introduction to Business Computing	4
ERM-100	Orientation to Energy & Resource Management	3
ERM-101	Energy & Resource Technology I: Intro	3
ERM-171	Energy Industry Health Awareness	3
HE-261	Community CPR	1
SP-100	Basic Speech Communication	3
SECOND TERM		
ERM 102	Energy & Resource Technology II: Electricity	3
ERM-107	Career Portfolio	3
ERM-108A	Career Industry Marketing Strategies	2
WR-121	English Composition	4
— —	MTH-065 Algebra II (or higher level of math)	4-5
THIRD TERM		
ERM-103	Energy & Resource Technology III: Generation	3
ERM-180	Energy & Resource Management/CWE	3
EC-201	Principles of Economics: MICRO	4
WR-122	English Composition	4
<i>Minimum credits required for certificate</i>		47-48

**ENERGY & RESOURCE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

Complete certificate program.

**ENERGY & RESOURCE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FOURTH TERM		CREDITS
BA-122	Teamwork: Project Management	3
BA-285	Human Relations in Business	4
ERM-201	Energy App. I: Renewable Energy Resources	4
SSC-180	Pathway to Sustainability	5
FIFTH TERM		
BA-123	Leadership & Motivation: Project Management	3
BA-267	Organizational Development & Behavior	4
ERM-202	Energy Applications II: Leadership	4
SSC-181	Pathway to Sustainability	5
SIXTH TERM		
BA-124	Negotiation: Project Management	3
BA-205	Solving Business Comm. Problems with Tech	4
ERM-203	Energy Application III: Seminar	4
SSC-182	Pathway to Sustainability	5
<i>Minimum credits required for degree</i>		95-96

**Utility Workforce Readiness**

● **Career Pathway Certificate**

A less than one-year program. The Utility Workforce Readiness Career Pathway program provides training that prepares students for entry-level positions in technical careers within the utility industry. It is important to be physically fit, to work well in a team environment, adhere to safety requirements and maintain ethical conduct in all work practices. The Utility Workforce Readiness Pathway Certificate is offered as part of the Energy & Resource Management Program. This certificate is endorsed by the Utility Training Alliance (UTA) comprised of Portland General Electric (PGE), PacifiCorp and Clackamas Community College. The certificate is also supported by other regional utility partners.

**PROGRAM OUTCOMES**

Successful completion of this program should enable students to demonstrate the core knowledge and hands-on skills needed to acquire entry level positions within the utility industry. To recognize and demonstrate safety as the first and foremost guide in work practices. Accept personal responsibility with compliance to all laws and performance standards. Produce reliable results that blend safety and performance into a unified work practice. Health & Safety Certification training includes: flagging, CPR/first aid, OSHA 10 and CDL permit.

**CAREERS**

Career opportunities may include: ground worker, tree trimmer, flagger, service technician, store room, maintenance and repair workers, general laborer or technical assistant.

For information contact Shelly Tracy, 503-594-0945 or shellyt@clackamas.edu

**UTILITY WORKFORCE READINESS CAREER PATHWAY CERTIFICATE**

FIRST TERM		CREDITS
ERM-100	Orientation to Energy & Resource Management	3
ERM-101	Energy & Resource Technology I: Intro	3
ERM-171	Energy Industry Workplace Health Awareness	3
ERM-172	Energy Industry Safety Development	3
HE-261	Community CPR	1
PSY-101	Human Relations	3
SECOND TERM		
ERM-102	Energy & Resource Technology II: Electricity	3
ERM-107	Career Portfolio	3
ERM-108A	Career Marketing Strategies	2
ERM-173	Energy Industry Performance Development	6
<i>Minimum credits required for certificate</i>		30

ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

## Fire Science (Wildland)

▲ *Associate of Applied Science Degree*

■ *Certificate*

The Fire Science (Wildland) program provides training that can lead to seasonal employment in wildland firefighting or to the first step to a career in the forest industry or park service. There are many career tracks in the field of wildland firefighting and forestry. It's exciting work that requires fundamental survival, safety and firefighting training and skills. It is also important to be physically fit, work well in a team environment, and respond quickly and efficiently to instruction/commands.

Clackamas Community College is a certified training site recognized by the Pacific Northwest Wildfire Coordinating Group (PNWCG) and the Oregon Department of Forestry. Program instructors are National Wildfire Coordinating Group (NWCG) certified and offer 15-30 years of wildland firefighting experience. Many of the courses carry NWCG certification as well as college credit.

### PROGRAM OUTCOMES

The Fire Science (Wildland) certificate program outcomes should include a basic knowledge of fire behavior, survival and wildland firefighting skills for entry-level wildland firefighting positions, such as Firefighter 2. The two-year Fire Science (Wildland) associate's degree expands on the first year to provide advanced training and awareness including environmental regulations, physical and mental preparedness and supervisory and leadership training.

### CAREERS

The certificate or degree can lead to careers as a wildland firefighter, forest and conservation technician, forest fire inspector or investigator, forest fire prevention specialist, independent firefighting contractor or employment in the timber industry.

For information contact Joe Crawford, ext. 5383 or [jcrawford@clackamas.edu](mailto:jcrawford@clackamas.edu); Tom Laugle, ext. 2319 or [toml@clackamas.edu](mailto:toml@clackamas.edu) or visit <http://depts.clackamas.cc.or.us/esh/wildland/>

### WILDERNESS SURVIVAL & LEADERSHIP

See Career Pathway Certificate program on page 77.

### FIRE SCIENCE (WILDLAND) CERTIFICATE

FIRST TERM		CREDITS
ESH-100	Environmental Regulations	3
FRP-130	Intro to Wildland Firefighting (S-130/S-190)	3
FRP-243	Survivor I: Map, Compass, GPS	2
HD-120	New Student College Success	1
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
PE-185	Physical Education (Recommended: Weight Training, Beg.)	1
WR-121	English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4
SECOND TERM		
FRP-211	Portable Pumps & Water Use (S-211)	1
FRP-216	Driving for the Fire Service (S-216)	2
FRP-244	Survivor II: Wilderness	2
FRP-246	Survivor IV: Wilderness First Aid	2
HE-261	Community CPR	1
PE-185	Physical Education (Recommended: Weight Training, Int., or Rock Climbing)	1
— —	General elective (any college-level course)	3-4
— —	Human Relations requirement (see page 21) (Recommended: PSY-101)	3
THIRD TERM		
FRP-110	Basic Wildland Fire Investigation (FI-110)	1
FRP-180	Wildland Firefighting/CWE	6
FRP-212	Wildfire Power Saws (S-212)	2
FRP-245	Survivor III: Weather of the NW	2
FRP-270	Basic Air Operations (S-270)	1
HOR-228	Plant Identification	3
PE-185	Physical Education (Recommended: Weight Training Adv. or Rock Climbing)	1
— —	General elective (any college-level course)	3-4
<i>Minimum credits required for certificate</i>		50-54

### FIRE SCIENCE (WILDLAND) ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### FIRE SCIENCE (WILDLAND) ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
ESH-101	Hazardous Waste Management	2
FRP-107	Wildland Fire Career Portfolio	3
FRP-131	Advanced Firefighter Training (S-131)	1
FRP-200	Basic Incident Command System (I-200)	1
— —	Fire Science (Wildland) program electives	2
— —	Science, Social Science or Fire Science (Wildland) program electives (Recommended: EMT-101)	4-5
FIFTH TERM		
FRP-215	Fire Operations in the Urban Interface (S-215)	3
FRP-249	Leadership for Firefighters (L-280)	2
FRP-290	Intermediate Wildland Fire Behavior (S-290)	3
— —	Science, Social Science or Fire Science (Wildland) program electives (Recommended: EMT-102)	4-5

**SIXTH TERM**

FRP-220	Initial Attack Incident Commander (S-200)	1
FRP-230	Crew Boss (Single Resource) (S-230)	2
FRP-231	Engine Boss (Single Resource) (S-231)	1
FRP-280	Wildland Fire/Advanced CWE	6
HPE-296	Health & Fitness for Industry	2
— —	Science, Social Science or Fire Science (Wildland) program electives	4-5
<i>Minimum credits required for degree</i>		91-98

**FIRE SCIENCE (WILDLAND) PROGRAM ELECTIVES**

COURSE		CREDITS
EMT-101	EMT Basic Part I	5
EMT-102	EMT Basic Part II	5
EMT-107	EMT Rescue	3
FRP-217	Interagency Helicopter Training (S-271)	3
FRP-232	Dozer Boss (Single Resource) (S-232)	1
FRP-236	Tactical Decision Making in Wildland Fire (S-336)	2
FRP-239	Division/Group Supervisor (S-339)	2
FRP-247	Survivor V: Dangerous Animals	2
FRP-248	Survivor VI: Introduction to Search and Rescue	2
FRP-259	Task Force/Strike Team Leader (S-330)	2
FRP-260	Interagency Incident Management (S-260)	1

**Wilderness Survival and Leadership**

● *Career Pathway Certificate*

*Pending State Approval*

The Wilderness Survival and Leadership program is designed for those students who would like to pursue a variety of careers in the outdoors. Students will understand leadership, survival and rescue in the wilderness. The certificate is part of the Wildland Fire career pathway.

**PROGRAM OUTCOMES**

Upon successful completion of the program, students will learn the basics of land navigation, wilderness first aid, Northwest weather prediction, wilderness preparedness, approaches to dealing with dangerous animals, search and rescue methods including evacuation techniques, and preparation of helicopter landing zones.

**CAREERS**

This program prepares students for employment in parks and recreation, guide services, search and rescue, state and federal agencies, private organizations, forestry jobs and Wildland Firefighting. The certificate gives students the necessary skills to lead and/or participate in any programs in a wide variety of settings that require leadership and competency in the outback regions of the Northwest.

**WILDERNESS SURVIVAL AND LEADERSHIP CAREER PATHWAY CERTIFICATE**

COURSE		CREDITS
FRP-243	Survivor I: Maps, Compass, GPS	2
FRP-244	Survivor II: Wilderness	2
FRP-245	Survivor III: Weather of the NW	2
FRP-246	Survivor IV: Wilderness First Aid	2
FRP-247	Survivor V: Dangerous Animals	2
FRP-248	Survivor VI: Introduction to Search & Rescue	2
or FRP-130	Intro to Wildnd firefighting (S-130/S-190)	2-3

*Minimum credits required for certificate*

12-13

Courses do not need to be taken in sequence.

**Manufacturing Technology**

- ▲ *Associated of Applied Science Degree*
- *Certificate*
- *Career Pathway Certificate*
- \* *Professional Upgrade*

Course work in manufacturing technology prepares students for careers in high-tech manufacturing by producing products to exacting industrial standards utilizing current manual and computer-aided machine tool technology. Many classes are taught in a flexible, open-lab format and students may enter the program any term.

Individualized daytime and evening instruction is provided in the operation of machine tools such as: lathes, mills, surface and cylindrical grinders and common machine shop equipment. Included in the degree program is the study of computer numerical control (CNC) programming and machining for milling, turning and electrical discharge machining (EDM), as well as courses in computer-aided manufacturing (CAM) utilizing current industrial CAD/CAM software. Quality control is stressed while students are taught a wide range of measuring and inspection techniques. Other topics include courses offered in welding, materials science and basic electricity. Many students enroll in these courses to upgrade existing job skills and several of our courses satisfy the continuing education unit (CEU) requirements of local apprenticeships and trade organizations.

**PROGRAM OUTCOMES**

Program outcomes include the skills necessary for entry-level technician and operator positions in manufacturing technology trades. Program outcomes also include the skills necessary for employment as apprentice machinist, leading to careers in tool and die making, maintenance machining, mold and model making.

*Continued*

ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

*Manufacturing Technology continued...*

### CAREERS

Career opportunities may include machine tool operator, CNC programmer/operator and CAD/CAM technicians.

### CNC MACHINING TECHNICIAN

See Career Pathway Certificate program on page 36.

### SHORT TERM TRAINING

For students who need a quick-entry strategy into the work force, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short-term training certificate is available. For information contact Mike Mattson, Department Chair, ext. 2483 or mattsonm@clackamas.edu; or the Manufacturing Department, ext. 2062.

### MANUFACTURING ENGINEERING TECHNOLOGY

(OIT Transfer Courses)

The CCC Manufacturing Technology Department, in partnership with Oregon Institute of Technology (OIT), offers a significant number of transferable classes into OIT's Manufacturing Engineering Technology degree program. Contact the Manufacturing Department, ext. 2062 for more information.

### CAD/CAM TECHNOLOGY DEGREE

See degree program on page 33.

### MANUFACTURING TECHNOLOGY CERTIFICATE

FIRST TERM	CREDITS
MFG-104 Print Reading	2
MFG-107 Industrial Safety & First Aid	3
MFG-111 Machine Tool Fundamentals I	9
MTH-050* Technical Mathematics I	3
SECOND TERM	
MFG-105 Dimensional Inspection	2
MFG-109 Computer Literacy for Technicians	3
or MFG-209 Programming and Automation for Manufacturing	3
MFG-112 Machine Tool Fundamentals II	9
WR-101* Communication Skills: Occupational Writing	3
THIRD TERM	
MFG-106 Applied Geometric Dimensioning & Tolerancing for Manufacturing	3
MFG-113** Machine Tool Fundamentals III	6
MFG-280 Manufacturing Technology/CWE	2
— — Manufacturing Technology program electives	3
— — Human Relations requirement (see page 21)	3
<i>Minimum credits required for certificate</i>	51

### MANUFACTURING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### MANUFACTURING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM	CREDITS
MFG-201 CNC I: Setup & Operation	4
MFG-204 Computer-Aided Manufacturing I	4
MFG-211 Machine Tool Fundamentals IV	6
MTH-080* Technical Mathematics II	3
FIFTH TERM	
MFG-202 CNC II: Programming & Operation	4
MFG-205 Computer-Aided Manufacturing II	4
— — Manufacturing Technology program electives	3
— — PE/Health requirement (see page 21)	3
SIXTH TERM	
MFG-203 CNC III: Applied Programming & Operation	3
MFG-206 Computer-Aided Manufacturing III	3
MFG-221 Materials Science	3
MFG-280 Manufacturing Technology/CWE	2
— —* General elective (any college-level course)	3
<i>Minimum credits required for degree</i>	96

### MANUFACTURING TECHNOLOGY PROGRAM ELECTIVES

Complete three or more credits from the following:

COURSE	CREDITS
CDT-103 Computer-Aided Drafting I	4
CDT-108A Introduction to Solid Modeling	3
CDT-223 Inventor Fundamentals	3
MFG-101 Essential Skills for Manufacturing I	2-4
MFG-113 Machine Tool Fundamentals III	3
MFG-130 Basic Electricity I	3
WLD-150 Welding Processes	4
— — Or other technical courses with departmental approval	

\*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

\*\*Students seeking to earn the associate's degree must take nine credits of MFG-113



## CNC Machining Technician

### ● Career Pathway Certificate

The CNC Machining Technician program at Clackamas provides the training necessary for employment within the advanced manufacturing field. The program is arranged with core CNC competencies in mind while allowing the student flexibility to take other relevant manufacturing courses. Course work covers blueprint reading, technical mathematics, safety, and manual and CNC machining. The program is fully transferable to the one-year manufacturing certificate or two-year manufacturing technology degree.

This certificate is part of the manufacturing career pathway preparing students for a wide variety of manufacturing careers and opportunities to continue at a four-year institution.

#### PROGRAM OUTCOMES

Upon successful completion of the program, students will have learned the skills necessary to obtain entry-level employment in the manufacturing field as a CNC operator.

#### CAREERS

Career opportunities may include entry-level CNC operator, machinist or general manufacturing technician.

For more information contact the Manufacturing Department at ext. 2062 or mattsonm@clackamas.edu

#### CNC MACHINING TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
MFG-104	Print Reading	2
MFG-107	Industrial Safety & First Aid	3
MFG-111	Machine Tool Fundamental I	9
MFG-201	CNC I: Set-up & Operation	4
MTH-050	Technical Mathematics I	3
— —	CNC Machining Technician program elective	2-4

Minimum credits required for certificate 23-25

#### CNC MACHINING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-101	Essential Skills for Manufacturing I	2-4
MFG-105	Dimensional Inspection	2
MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	2
MFG-112	Machine Tool Fundamental II	3
MFG-202	CNC II: Programming & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
WLD-150	Welding Processes	4

## Microelectronics Systems Technology

### ▲ Associate of Applied Science Degree

### ■ Certificate

### \* Professional Upgrade

This program prepares students for entry into the microelectronics and semiconductor industries. Course work focuses on wafer manufacturing, integrated circuit fabrication, component manufacturing, microelectronic assembly and equipment maintenance. Specific skill areas include: silicon materials fabrication, silicon manufacturing, semiconductor processing, microcontamination and particle control, troubleshooting of equipment and systems, microlithography, ion implantation, etch and chemical vapor deposition.

#### PROGRAM OUTCOMES

Program outcomes include the skills necessary for entry-level employment into the microelectronics and semiconductor industries as technicians, operators and processors.

#### CAREERS

Career opportunities may include fabrication technician, equipment technician and product test technician.

For information contact Mike Mattson, ext. 2483 or mattsonm@clackamas.edu

#### MICROELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
EET-112	Electronic Test Equipment & Soldering	3
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
MFG-107	Industrial Safety & First Aid	3
MTH-050*	Technical Mathematics I	3
SM-150	Semiconductor Processing I	2
WR-101*	Communication Skills: Occupational Writing	3

#### SECOND TERM

EET-141	Electrical Fundamentals II	4
EET-157	Digital Logic I	3
ESH-100	Environmental Regulations	2
MFG-109	Computer Literacy for Technicians	3
MTH-080*	Technical Mathematics II	3
SM-160	Semiconductor Processing II	2

#### THIRD TERM

EET-127	Semiconductor Circuits I	4
EET-142	Electrical Fundamentals III	4
MTH-085*	Technical Mathematics III	3
SM-170	Semiconductor Processing III	2
SM-280	Electronics & Microelectronics/CWE	2
SP-100*	Basic Speech Communication	3

Minimum credits required for certificate 55

Continued

ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

*Microelectronics Systems Technology continued...*

**MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

Complete certificate program.

**MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FOURTH TERM	CREDITS
CH-104     Introductory Chemistry	5
EET-215    Principles & Applications of Manufacturing Equipment Technology	2
EET-239    Principles of Troubleshooting II	2
MFG-104    Print Reading	2
— —        Human Relations requirement (see page 21)	3
FIFTH TERM	
EET-250    Linear Circuits	3
MFG-140    Principles of Fluid Power	3
MFG-209    Programming and Automation for Manufacturing	3
SM-136     Photolithography	2
SM-280     Electronics & Microelectronics/CWE	2
— —        Microelectronics Systems Technology program elective	3
SIXTH TERM	
EET-230    Laser and Fiber Optics	3
MFG-133    Programmable Logic Controllers	3
SM-229     Vacuum Technology	2
— —        PE/Health requirement (see page 21)	3
— —        Microelectronics Systems Technology program electives	3
<i>Minimum credits required for degree</i>	99

**MICROELECTRONICS SYSTEMS TECHNOLOGY PROGRAM ELECTIVES:**

Any course with an EET, SM, MFG, WLD or CDT prefix not already in the Microelectronics Systems Technology program.

\*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

**ELECTRONICS ENGINEERING TECHNOLOGY**  
(OIT Transfer Courses)

The Manufacturing Technology Department, in cooperation with Oregon Institute of Technology (OIT), offers a number of transferable microelectronics classes into OIT's Electronics Engineering Technology degree program. Contact Mike Mattson, ext. 2483 or mattsonm@clackamas.edu, for more information.

## Network & Microcomputer Specialist

▲ *Associate of Applied Science Degree*

■ *Certificate*

Students may earn either a one-year certificate or a two-year Associate of Applied Science degree. The course work emphasizes development of analytical and problem-solving skills. Cooperative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

**PROGRAM PREREQUISITES**

Prerequisites for first term classes include completed course work or placement out of CS-120 Survey of Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite. Note: Placement at a level of math higher than MTH-092 does not satisfy the MTH-092 requirement.

**PROGRAM OUTCOMES**

Program outcomes should include skills for entry-level positions in network administration and microcomputer support. Microcomputer specialists install, maintain, upgrade and troubleshoot PC hardware. Network specialists, using software such as Novell, Linux/Unix, or Windows, work with organizational computers to keep hardware and software operational and provide secure access to business information.

**CAREERS**

Career opportunities may include network specialist, computer service technician, field engineer, customer service engineer, computer technician, and PC/LAN support specialist.

For information contact Len Eaton, ext. 2751 or lene@clackamas.edu

**NETWORK & MICROCOMPUTER SPECIALIST CERTIFICATE**

FALL TERM	CREDITS
CS-121     Computer Applications	3
CS-140     Operating Systems I	4
CS-150     Computer Technician Orientation	2
CS-225     Computer End-User Support	3
MTH-092    Math for Computer Technicians	4
WINTER TERM	
CS-125H    HTML & Web Site Design	3
CS-179     Data Communications Concepts	3
CS-227     PC Hardware & Repair I	4
CS-240W    Operating Systems II: Windows	3
WR-101     Communication Skills: Occupational Writing or WR-121 English Composition	3-4

**SPRING TERM**

CS-140U	Operating Systems I: Linux/UNIX	3
CS-228	PC Hardware & Repair II	4
CS-279W	LAN I: Windows Server Administration	4
CS-280	Computer Science/CWE	3
— —	Human Relations requirement (see page 21) (Recommended: BA-285 or PSY-101)	3-4

Minimum credits required for certificate 49-51

**NETWORK & MICROCOMPUTER SPECIALIST ASSOCIATES OF APPLIED SCIENCE DEGREE: 1ST YEAR**

Complete certificate program.

**NETWORK & MICROCOMPUTER SPECIALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

**FALL TERM CREDITS**

CS-135DB	Advanced Database	3
CS-229	Network Hardware	4
CS-240U	Operating Systems II: Linux/UNIX	3
— —	Network & Microcomputer program elective	3-4
— —	PE/Health requirement (see page 21)	1

**WINTER TERM**

CS-284	Network Security	3
CS-287X	Microsoft Exchange Server	3
CS-288W	LAN II: TCP/IP	4
CS-289I	Web Server Administration: Internet Information Server	3
— —	Network & Microcomputer program elective	3-4

**SPRING TERM**

CS-280	Computer Science/CWE	6
CS-289A	Web Server Administration: Apache	3
CS-297N	Network Capstone	4
— —	Network & Microcomputer program elective	3-4

Minimum credits required for degree 95-100

**NETWORK & MICROCOMPUTER SPECIALIST PROGRAM ELECTIVES**

Complete 9-12 credits from the following:

**COURSE CREDITS**

BA-101	Introduction to Business	4
BA-103	Business Strategies for Computer Consultants	3
— —	Any computer science course numbered 125 or above except CS-178.	

Note: Students may not take more than six credits of CWE in a term.

**Professional Truck Driver**

**■ Certificate**

*Pending State Approval*

The Professional Truck Driver program at Clackamas provides the necessary training for employment within the Transportation and Logistics field. Course work covers rules, regulations and practices, practical applications, customer service skills, and C.D.L. (Commercial Driver's Licensing) training provided in conjunction with the IITR truck driving school. This four class series is part of a statewide program designed to put you in the driver's seat of an exciting career.

**PROGRAM OUTCOMES**

Upon successful completion of the program, students will have earned a Commercial Driver's License, and have learned the necessary skills to obtain employment in the Transportation and Logistics industry.

**CAREERS**

Career opportunities may include short and long haul trucking, delivery services, public transportation, supply and logistics management, and dispatching.

For more information contact the Automotive Department at ext. 2354 or BradleyD@clackamas.edu

**PROFESSIONAL TRUCK DRIVER CERTIFICATE:**

<b>COURSE</b>		<b>CREDITS</b>
TTL-101	Introduction to Transportation & Logistics	4
TTL-121	Practical Applications in Transportation & Logistics	6
TTL-141	Transportation Customer Service Skills	3
TTL-180	Transportation & Logistics/CWE	6

Minimum credits required for certificate 19

ODE CAREER LEARNING AREA  
*Industrial and Engineering Systems*

## Welding Technology

▲ *Associate of Applied Science Degree*

■ *Certificate*

● *Career Pathway Certificate*

\* *Professional Upgrade*

This program prepares students for entry into these industries: fabricated structural metal products, motor vehicles and equipment, construction and heavy construction, transportation equipment, ship and boat building and repair, aircraft and parts, self-employment and miscellaneous fabricated metal products.

CCC's welding instructors are American Welding Society (AWS) certified professionals and utilize AWS curriculum, the international standard.

Course work focuses on the knowledge and skills to perform:

- Fillet welds and groove welds using:
  - Shielded metal arc welding (SMAW)
  - Gas-metal arc welding (GMAW)
  - Flux-core arc welding (FCAW)
  - Gas-tungsten arc welding (GTAW)
  - Steel, stainless steel and aluminum
  - A variety of different electrodes
- Plasma arc cutting (PAC), air carbon arc cutting (CAC-A) and gouging, manual and automatic oxy-fuel cutting (OFC and OFC-Track Burner) processes
- Knowledge of materials science and welding theory
- Print reading, inspection, quality, safety and shop practices
- Fabrication techniques, including job cost calculations, layout, sketching, bills of material, fitting and cutting welding applied to real projects designed by industry partners

### PROGRAM OUTCOMES

Program outcomes include the skills necessary for entry-level employment in large, medium and small employers in the industries listed above as trained welders, flame and plasma cutters, fabricators, fitters and welding machine operators. Welders can advance to more skilled jobs with additional training and experience, such as technicians, supervisors, inspectors or instructors.

### CAREERS

Career opportunities may include welding, fabrication, construction, production welding, CNC cutting machine operation and sheet metal.

### ENTRY-LEVEL WELDING TECHNICIAN

See Career Pathway Certificate program on page 76.

### SHORT-TERM TRAINING

For students who need a quick-entry strategy into the work force, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information.

For information contact Paul Wanner, ext. 2691 or paulw@clackamas.edu or the Applied Technology Department, ext. 2843.

### WELDING TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-107	Industrial Safety & First Aid	3
MTH-050*	Technical Mathematics I	3
WLD-100	Welders' Print Reading	3
WLD-111	Shielded Metal Arc Welding (STICK)	8

#### SECOND TERM

MFG-109	Computer Literacy for Technicians	3
WLD-112	Intro SMAW Pre-Pipe Welding	2
WLD-113	GMAW/FCAW (Wirefeed)	8
WLD-200	Welders' Print Reading II	3
WR-101*	Communication Skills: Occupational Writing	3

#### THIRD TERM

MFG-221	Materials Science	3
WLD-110	Welder Certification	1-4
WLD-115	Gas Tungsten Arc Welding (GTAW)	8
WLD-280	Welding Technology/CWE	2
— —	Human Relations Requirement (see page 21)	3

*Minimum credits required for certificate*

53-56

### WELDING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### WELDING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
MFG-111	Machine Tool Fundamentals I	3
WLD-211	Advanced SMAW	4
WLD-250	Welding Fabrication I Beginning Project	4
— —	PE/Health requirement (see page 21)	1

#### FIFTH TERM

WLD-210	Beginning SMAW Pipe Welding	2
WLD-213	Advanced GMAW/FCAW	4
WLD-251	Welding Fabrication II Intermediate Project	4
— —*	General electives (any college level course)	3

#### SIXTH TERM

WLD-215	Advanced GTAW	4
WLD-252	Welding Fabrication III Advanced Project	4
WLD-280	Welding Technology/CWE	2
— —	Welding program elective	2-6

*Minimum credits required for degree*

90-97

\* Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

#### WELDING PROGRAM ELECTIVES

COURSE		CREDITS
WLD-102	Introduction to Welding	2
WLD-103	Traditional Iron Working	2
WLD-104	Intro to CNC Plasma Cutting	2
WLD-150	Welding Processes	4
WLD-212	SMAW Pipe Welding	2
WLD-261	Special Projects	2

## Entry Level Welding Technician

### ● Career Pathway Certificate

#### Pending State Approval

This program is designed with core competencies in mind while allowing the student flexibility to take other relevant welding courses.

#### PROGRAM OUTCOMES

This program prepares students for employment in entry level welding positions with a variety of industries. Course work focuses on the knowledge and skills to perform the following tasks: measure and cut material accurately; read and understand blueprints; weld fillet and groove welds in all positions with the process of their choice; repair their mistakes and fabricate parts.

#### CAREERS

Career opportunities include entry level jobs in cutting parts, blueprint reading and fitting, tacking, production welding, repair welding and fabrication.

#### WELDING/ENTRY LEVEL WELDING TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
MFG-107	Industrial Safety & First Aid	3
WLD-100	Welders' Print Reading	3
WLD-250	Welding Fabrication I/Beginning Project	4
— —	Welding/Entry Level Welding Technician program electives	11-12
<i>Minimum credits required for certificate</i>		21-22

#### WELDING/ENTRY LEVEL WELDING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-111	Machine Tool Fundamentals I	3
WLD-110	Welder Certification	1 or 4
WLD-111	Shielded Metal Arc Welding (STICK)	4 or 8
WLD-113	GMAW/FCAW (Wirefeed)	4 or 8
WLD-115	Gas Tungsten Arc Welding	4 or 8



## Additional Programs

### Employment Skills Training

#### ■ Certificate

The Employment Skills Training certificate provides a quick entry strategy for learning the knowledge and skills necessary to start or change a career path.

Combines college courses with specified hands-on instruction at a local employer to improve employability. The student's goals and needs are combined with information from employers, the labor market and the college to determine the knowledge and skills needed to obtain employment in a specific occupation. The student receives an individualized Employment Skills Training (EST) plan.

In addition to preparing a person for employment, the individualized EST plan guides the student in gaining more education and training which develops the student's career path. The program is open entry/open exit, allowing students to begin any term.

#### PROGRAM REQUIREMENTS

A certificate is earned by completing at least 12 credits of occupationally related college-level classes. For every three occupationally related credits, one cooperative work experience credit may be included in the plan.

An EST plan must be developed with and approved by a department's faculty advisor.

All of the college's collegiate level credit courses are eligible to be included in the certificate. Developmental courses may be included as prerequisites in a plan but can not be part of the EST certificate.

#### PROGRAM OUTCOMES

Program outcomes are specific to the student's goals and may include:

Individualized plan detailing the college courses to be completed and the knowledge and skills to be learned.

Occupation specific knowledge and skills developed on the job and in the classroom.

Basic employment skills, job search skills, career management skills and/or an introductory contact with an employer(s) and/or hiring manager(s).

#### CAREERS

Completion of an EST certificate can impact any career.

For information please contact the Career & Employer Resource Center at ext. 2232 or ext. 2409, [career@clackamas.edu](mailto:career@clackamas.edu), <http://depts.clackamas.edu/career>; or contact the Advising and Counseling Center at ext. 2794.

### Occupational Skills Training

#### ■ Certificate

The Occupational Skills Training program provides the opportunity for students to receive hands-on training in a specific occupational area. This program is designed for students who need or prefer work-based training to develop their skills. Students may begin their training at any time.

Students participate in supervised and structured work-based training in addition to classroom instruction. The program utilizes local businesses as training sites.

Individualized training plans are developed in consultation with the student, work-site trainer, CCC faculty and program coordinator.

#### PROGRAM OUTCOMES

Individualized training curriculum and employment plan, which describe the skills and knowledge necessary for the student to become competitively employable.

Contact with employers beyond what would ordinarily be available through an application process.

Increased occupational skills through hands on training provided by an employer and through general education and occupation related classroom instruction.

#### CAREERS

Career opportunities may be available in a variety of occupations, depending on the goals, skills and aptitude of the student and the availability of local training sites.

For information please contact the Career & Employer Resource Center at ext. 2232, or ext. 2409, [career@clackamas.edu](mailto:career@clackamas.edu), <http://depts.clackamas.edu/career>; or contact the Advising & Counseling Center at ext. 2794.

#### OCCUPATIONAL SKILLS TRAINING CERTIFICATE

##### PROGRAM REQUIREMENTS

OST-180	Occupational Skills Training/CWE	24
— —	Occupational Related Courses	15

##### RELATED INSTRUCTION REQUIREMENTS

MTH-050	Technical Mathematics I	3
WR-101	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 21)	3

*Minimum credits required for certificate* 48

## Wilsonville Campus

29353 SW Town Center Loop East  
Wilsonville, Oregon



*Continued*

To reach any college office, call 503-657-6958 and dial the extension you want. (Hearing-impaired TTY/TDD 503-650-6649)