Career Technical Programs

Education That Works

Clackamas
Community College

Approved Related Instruction Courses
Associate of Applied Science Degrees and Certificates

Associate of Applied Science (AAS)

For an Associate of Applied Science degree complete one course from each of the following requirement areas:

- Communication
- Computation
- Human Relations
- Physical Education/Health/Safety/First Aid

Certificate of Completion (CC)

For a Certificate of Completion that is at least one academic year in program length, complete one course from each of the following requirement areas:

- Communication
- Computation
- Human Relations

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of any of these programs.

List of Approved Courses:

The following represents approved courses for meeting related instruction requirement areas.

Communication

WR-101, 121, 122, 222, 227; BA-214

Computation

Computer Science: CS-133VB, 161, 162, 260
Mathematics: BA-104; MTH-050, 054, 065 or above (except 199 and 299)

Human Relations

Business: BA-285
Criminal Justice: CJA-250
Education: ED-258
Human Services: HS-156; HD-161
Oral Communication: COMM-100, 126, 140, 218, 219, 227
Psychology: PSY-101, 215 (for Nursing Program only)

Physical Education/Health/Safety/First Aid

Health/Safety/First Aid: Courses with an HE prefix, HOR-115, FRP-246, or MFG-107
Physical Education: Courses with an HPE or PE prefix

Cooperative Work Experience (CWE)

The Cooperative Work Experience (CWE) is an internship program which offers students the opportunity to earn college credit by working in a job directly related to their program of study. CWE offers expanded learning experiences through exposure to actual work situations, organizational relationships, equipment, and techniques that cannot be duplicated in the classroom.

CCC's CWE program creates a vital bridge between college studies and workplace success

Requirements & Registration for CWE:

- Declare a program of study and complete all prerequisites for CWE.

- 1-3 terms before the end of your program, meet with the CWE instructor in your department to discuss CWE requirements.

- Determine number of credits to enroll in. You are expected to work approximately 30 hours for each CWE credit.

- Secure the CWE Work Site

  - If you have a job appropriate to your program of study, get this approved by your CWE instructor.

  - If you do not have a CWE site, find one with the assistance of your instructor.

- Final Steps to enrolling in CWE

  - Fill out online application. (Application can be found at *www.clackamas.edu/cwe*)

  - Fill out the form with 1) the appropriate CWE course for program of study, and 2) the classroom or online CWE seminar.

  - Get signature from your instructor on the registration form.

  - Get signature and stamp from the CWE office on the registration form.

  - Turn registration form in to registration office.

- Participate in a CWE seminar course on career management skills and complete seminar assignments.

- Successfully complete 30 hours of work experience for every credit.

Credit & Grading

The number of credits earned depends on the number of hours worked and the program requirements. Students may earn a maximum of 12 CWE credits per year.

Work/Credit Chart			
# of Credits	Hours Worked Per Week	Total Hours Per Term	Seminar Hours Per Term
6 credits	18-20 hours	180-216 hours	16 hours
5 credits	15-17 hours	150-179 hours	16 hours
4 credits	12-14 hours	120-149 hours	16 hours
3 credits	9-11 hours	90-119 hours	16 hours
2 credits	6-8 hours	60-89 hours	16 hours
1 credit	3-5 hours	30-59 hours	16 hours

Career Technical Programs

Accounting Assistant

Associate of Applied Science Degree

PROGRAM CODE: AAS.ACCNTGASST

The Accounting Assistant program at Clackamas Community College 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 objective of the Accounting Assistant AAS program is to prepare students for a professional career within a focus area of accounting by building both technical and soft skills.

The program is not designed to lead to a traditional four-year business administration degree. For students interested in pursuing a bachelor's degree, the Accounting Assistant Associate of Applied Science articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- meet the financial needs and objectives of external stakeholders and/or clients, including preparing and interpreting basic financial reports and statements, and communicating verbally and in writing performance results and recommendations;
- capably use basic business and accounting computerized tools and systems;
- organize, analyze, and record financial events by applying the principles, standards, and practices of accounting in a variety of specialized areas, including financial, managerial, cost, income tax, payroll, governmental and nonprofit, and budgeting;
- comprehend overall business environments and aspects that inform financial situations, including legal and economic events;
- inform internal operational planning, decision-making, and continuous improvement using costing systems, basic budgeting, performance evaluation, and forecasting.

CAREERS

Career opportunities include GSI Accountant I, bookkeeper, payroll clerk, accounts receivable or payable clerk, financial staff accountant, financial analyst, or cost accountant.

OREGON TECH TRANSFER COURSES

The Business Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Dr. Joan San-Claire, *joan.san-claire@clackamas.edu*

ACCOUNTING ASSISTANT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
WR-121	English Composition	4
WINTER TERM		
BA-131	Introduction to Business Computing	4
*BA-156	Business Forecasting	
or EC-201	Principles of Economics: MICRO	3-4
BA-177	Payroll Accounting	3
BA-211	Financial Accounting I	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-212	Financial Accounting II	4
BA-285	Human Relations in Business	4
CS-135S	Microsoft Excel	3

ACCOUNTING ASSISTANT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-213	Decision Making with Accounting Information	4
BA-218	Personal Finance	4
BA-226	Business Law I	4
WR-227	Technical Report Writing	4
WINTER TERM		
BA-216	Cost Accounting	3
BA-240	Introduction to Financial Management	4
BA-256	Income Tax Accounting	4
*— —	Accounting Assistant program electives	4
SPRING TERM		
BA-217	Budgeting for Managers	3
BA-228	Computerized Accounting	3
BA-255	Advanced Topics in Accounting	4
*— —	Accounting Assistant program electives	3-4
Credits required for degree		*90*

ACCOUNTING ASSISTANT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Accounting Assistant program.

* Students who take BA-156 must complete 8 elective credits. Students who take EC-201 must complete 7 elective credits.

Accounting Clerk

Certificate

PROGRAM CODE: CC.ACNTGCLERK

Curriculum includes basic bookkeeping and accounting, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related tasks.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:
- meet the financial needs and objectives of external stakeholders and/or clients, including preparing and interpreting basic financial reports and statements, and communicating verbally and in writing performance results and recommendations;
- capably use basic business and accounting computerized tools and systems;
- organize, analyze, and record financial events by applying the principles, standards, and practices of accounting in the areas of financial accounting and payroll;
- comprehend overall business environments and aspects that inform financial situations, including economic events.

CAREERS

Career opportunities include accounts payable or receivable clerk, payroll clerk, and bookkeeper for small and medium-sized service businesses.

For information contact Dr. Joan San-Claire, *joan.san-claire@clackamas.edu*

ACCOUNTING CLERK CERTIFICATE

FIRST TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
WR-121	English Composition	4
SECOND TERM		
*BA-112	General Accounting II	4
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	
or EC-201	Principles of Economics: MICRO	3-4
BA-177	Payroll Accounting	3

THIRD TERM		
BA-211	Financial Accounting I	4
BA-228	Computerized Accounting	3
BA-285	Human Relations in Business	4
CS-135S	Microsoft Excel	3
— —	Accounting Clerks program electives	3-4
Credits required for certificate		*45-48*

ACCOUNTING ASSISTANT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Accounting Clerk program.

*BA-212 may be taken instead of BA-112. BA-112 is recommended for students who wish to study small business accounting, whereas BA-212 is corporate-focused.

Courses in this program can be applied to satisfy elective requirements in the Business AAS degree.

Administrative Professional

Associate of Applied Science Degree

PROGRAM CODE: AAS.ADMINPRO

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1 credit- courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:
- analyze and apply basic computer literacy skills, including typing by touch and numerical data entry keyboarding skills;
- effectively and independently utilize business standard software applications (word processing, spreadsheets, database creation/organization, presentations, email/calendars, creation of forms and pdf documents, and office organizational tools);
- identify and analyze the skills necessary for effective office, business, and organizational operations;

- articulate, analyze, and apply basic business math and accounting skills common to business and organizational operations;
- articulate, analyze, and apply basic English grammar within common business documents (letters, reports, memos) as well as in verbal communication and presentations common to business offices and organizations.

CAREERS

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

For information contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu.*

ADMINISTRATIVE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121	English Composition	4

WINTER TERM		
BA-111 or BA-211	General Accounting I Financial Accounting I	4
BT-120	Personal Keyboarding	2
BT-121	Data Entry	1
BT-124	Business Editing I	3
BT-160	Word I	3

SPRING TERM		
BT-125	Business Editing II	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
CS-135S	Microsoft Excel	3
— —	Administrative Professional program electives	3

ADMINISTRATIVE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-205	Business Communications with Technology	4
BA-226	Business Law I	4
BA-285	Human Relations in Business	4
BT-262	Integrated Projects	4

WINTER TERM		
BA-206	Management Fundamentals	4
BA-218	Personal Finance	4
BA-224	Human Resource Management	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Administrative Professional program electives	3

SPRING TERM		
BA-228	Computerized Accounting	3
BT-122	Keyboarding Skillbuilding	2
BT-216	Office Procedures	4
BT-271	Advanced Business Projects	4
— —	Administrative Professional program electives	3
Credits required for degree		*90*

ADMINISTRATIVE PROFESSIONAL PROGRAM ELECTIVES

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

Administrative Assistant

Certificate

PROGRAM CODE: CC.ADMINASST

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- analyze and apply basic computer literacy skills, including typing by touch and numerical data entry keyboarding skills;
- effectively utilize business standard software applications (word processing, spreadsheets, database creation/organization, presentations, email/calendars, creation of forms and pdf documents, and office organizational tools);
- identify and analyze the skills necessary for effective office and business operations;
- effectively apply basic business math skills within the full cycle bookkeeping process utilized within office and business operations;
- articulate, analyze, and apply basic English grammar within common business documents (letters, reports, memos) as well as in verbal communication and presentations common to business offices and organizations.

CAREERS

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

For information contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu.*

ADMINISTRATIVE ASSISTANT CERTIFICATE

FALL TERM		CREDITS
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
BT-120	Personal Keyboarding	2
BT-121	Data Entry	1
WR-121	English Composition	4

Administrative Assistant continued…

WINTER TERM

BA-111	General Accounting I	
or BA-211	Financial Accounting I	4
BT-122	Keyboarding Skillbuilding	2
BT-124	Business Editing I	3
BT-160	Word I	3
— —	Administrative Assistant program electives	3

SPRING TERM

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-216	Office Procedures	4
Credits required for certificate		45

ADMINISTRATIVE ASSISTANT PROGRAM ELECTIVES

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

Administrative Assistant Training

Certificate

PROGRAM CODE: CC.ADMINTRNG

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

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- analyze and apply basic computer literacy skills, including typing by touch;
- effectively utilize business standard software applications (word processing, spreadsheets, database creation/organization, presentations, and email/calendars);
- identify and analyze the skills necessary for effective office operations;
- effectively apply basic business math skills within the full cycle bookkeeping process utilized within office and business operations;
- articulate, analyze, and apply basic English grammar within common business documents (letters, reports, memos) as well as in verbal communication and presentations common to business offices and organizations.

CAREERS

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

For information contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu*

ADMINISTRATIVE ASSISTANT TRAINING CERTIFICATE

FALL TERM		**CREDITS**
BA-104	Business Math	3
BT-120	Personal Keyboarding	2
BT-124	Business Editing I	3
WINTER TERM		
BA-111	General Accounting I	4
BT-125	Business Editing II	3
BT-160	Word I	3
SPRING TERM		
BT-122	Keyboarding Skillbuilding	2
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
Credits required for certificate		29

Apprenticeship

Career Pathway Certificate
Certificate
Associate of Applied Science Degree

PROGRAM CODES: VARIES

Registered Apprenticeship is a method of career and technical education recognized by the Apprenticeship and Training Division of the Oregon Bureau of Labor and Industries (BOLI). It combines on-the-job training and trade-related instruction taken in conjunction with each other. Apprenticeship courses are approved for BOLI-registered apprentices or journey-level workers and are not available to the general public.

CCC's apprenticeship programs offer Statewide Associate of Applied Science degrees, Certificates of Completion and Career Pathway Certificates of Completion for journeymen in the areas of Inside Electrician (IE), Limited Energy (LE), Protective Signaling (LE), Limited Maintenance Electrician (LME), Lineman (UL), Meterman (UM), Wireman (UW), Line Estimator (UE), Painter (PT), and Plumber (PB).

A journeyman has the opportunity to receive a Career Pathway Certificate of Completion, Certificate of Completion and/or Associate of Applied Science degree in their designated field of study upon the completion of their on-the-job training (OJT), related training, journey level card/certificate and the required Related Instruction courses and possible elective courses, depending on the trade.

Electricians and plumbers require state licensure. Related training courses meet industry standards and are offered through a partnership between the Oregon State Apprenticeship & Training Council and the local Joint Apprenticeship & Training Committee.

If you are interested in becoming registered in an Oregon State Apprenticeship program, please contact the Oregon State Bureau of Labor and Industries Apprenticeship and Training Division at 971-673-0761 or *www.boli.state.or.us* for program and entrance requirements.

For more information on CCC's apprenticeship certificates and degrees, contact the Apprenticeship Coordinator at 503-594-3031 or Apprenticeship Advisor at 503-594-0959, *apprenticeship@clackamas.edu*.

Construction Trades, General Apprenticeship AAS Degree

(Limited Entry Program-Journeyman's card required)

RELATED INSTRUCTION OUTCOMES

Computation (4-5 credits - See page 82 for course list)
- Use appropriate mathematics to solve problems

Communication (3-4 credits- See page 82 for course list)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (3-4 credits - See page 82 for course list)
- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1-3 credits-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000-8000-HR BOLI-ATD Trades: Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, *Painter, Pile Driver, *Plumber, Scaffold Erector, and Sheet Metal.

*Programs offered at Clackamas Community College through partnership with local JATC.

Construction Trades, General Apprenticeship Certificate

(Limited Entry Program-Journeyman's card required)

RELATED INSTRUCTION OUTCOMES

Computation (3-4 credits- See page 82 for course list)
- Use appropriate mathematics to solve problems.

Communication (3-4 credits- See page 82 for course list)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits - See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000-8000-HR BOLI-ATD Trades Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, Painter, Pile Driver, *Plumber, Scaffold Erector, and Sheet Metal.

*Programs offered at Clackamas Community College through partnership with local JATC.

Manual Apprenticeship Trades Career Pathway Certificate

(Limited Entry Program-Journeyman's card required)

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000-8000-HR BOLI-ATD Trades Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, *Painter, Pile Driver, Plumber, Scaffold Erector, and Sheet Metal.

*Programs offered at Clackamas Community College through partnership with local JATC.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- complete a minimum of 6000-8000 hours State of Oregon-approved on-the-job training (OJT);
- demonstrate safe working practices including rigging and lock out tag out in accordance with state and federal regulations;
- apply OSHA practices in relationship to the specific trade;
- apply theory as it relates to trade competencies;
- utilize recognized standard building codes guidelines as applicable;
- demonstrate ability to perform welding/brazing applications;
- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations;
- demonstrate the proper care, use and storage of hand and power tools;
- read and interpret building plans and drawings;
- prepare and utilize isometric sketching and detailed drawings per individual trade;
- utilize recognized standard building codes guidelines as applicable;
- complete required related training with a grade C or higher;
- complete a code prep exam with a 75% or higher score per individual trade.

Electrician Apprenticeship Technologies AAS Degree

(Limited Entry Program-Journeyman's card required)

RELATED INSTRUCTION OUTCOMES

Computation (3-4 credits- See page 82 for course list)
- Use appropriate mathematics to solve problems.

Communication (3-4 credits- See page 82 for course list)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits - See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

Apprenticeship continued…

Physical Education/Health/Safety/First Aid (1-3 credits-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

4000 Hour BOLI-ATD Trades: Limited Energy Technician License B, *Limited Maintenance Electrician, Limited

Renewable Energy Technician, and Limited Residential Electrician.

6000 Hours BOLI-ATD Trades: *Limited Energy Technician and Sign Maker/Fabricator

8000 Hours BOLI-ATD Trades: *Inside Electrician, Manufacturing Plant Electrician, Sign Assembler/Fabricator,

Sign Maker/Erector, Stationary Engineer, *Lineman, *Meterman, and *Wireman

*Programs offered at Clackamas Community College through partnership with local JATC or EIC.

Electrician Apprenticeship Technologies Certificate

(Limited Entry Program-Journeyman's card required)

RELATED INSTRUCTION OUTCOMES

Computation (3 credits- See page 82 for course list)
- Use appropriate mathematics to solve problems.

Communication (3 credits- See page 82 for course list)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000 Hours BOLI-ATD Trades: *Limited Energy Technician and Sign Maker/Fabricator

8000 Hours BOLI-ATD Trades: *Inside Electrician, Manufacturing Plant Electrician, Sign Assembler/Fabricator, Sign Maker/Erector, and Stationary Engineer.

*Programs offered at Clackamas Community College through partnership with local JATC or EIC.

Limited License Electrician Apprenticeship Technologies Career Pathway Certificate

(Limited Entry Program-Journeyman's card required)

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

4000 Hour BOLI-ATD Trades: *Limited Energy Technician License B, Limited Maintenance Electrician, Limited Renewable Energy Technician, and Limited Residential Electrician.

6000 Hours BOLI-ATD Trades: *Limited Energy Technician License A and Sign Maker/Fabricator

*Programs offered at Clackamas Community College through partnership with local JATC or EIC.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- complete 4000-8000 hours State of Oregon-approved on-the-job-training. (OJT);
- complete all required related-training with a grade of C or better;
- solve mathematical formulas and equations of theory;
- describe and apply basic theory of electrical sources;
- demonstrate safe working practices in accordance with state and federal regulations;
- calculate voltage drop;
- solve electrical equations using trade-specific mathematical formulas;
- use test equipment to make electrical measurements;
- appropriate use and care of trade-specific equipment;
- operate PLC's according to trade-specific applications and methodology;
- describe various troubleshooting techniques of trade-specific equipment;
- draw and interpret blueprints and schematics;
- interpret NEC and Oregon Specialty Codes;
- complete & pass timed practice exams;
- demonstrate knowledge of industry terminology;
- use the NEC articles and tables to perform various calculations;
- utilize the Oregon Administrative Rules (OARs) in relation to the NEC and Oregon Specialty Codes (OSC);
- complete the NEC code preparation exams with a 75% and higher.

OREGON TECH TRANSFER COURSES

The programs provide statewide transfer opportunities into either a Bachelor of Science degree in Applied Technology and Management or a Bachelor of Science degree in Operations Management at the Oregon Institute of Technology.

Auto Body/Collision Repair and Refinishing Technology

Associate of Applied Science Degree

PROGRAM CODE: AAS.ABCOLRRTECH

The Auto Body/Collision Repair and Refinishing program 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. This degree qualifies students for I-CAR Non-structural Technician Pro Level I and I-CAR Refinish Technician Pro Level I Certification.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics or MTH-065 Algebra II)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupation Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- Recommended: COMM-100 Basic Speech Communication or PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits-courses with HE, HPE, or PE prefix; Recommended: HE-252 First Aid/CPR/AED or MFG-107 Industrial Safety & First Aid)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the proper selection of tools and materials needed to perform metal straightening and plastic filler repair processes;
- prepare a repaired surface, choose and apply appropriate materials, block sand, clean surface, and apply topcoat, detail;
- repair sheet metal damage, demonstrate panel replacement techniques, identify structural damage, and formulate viable repair processes;
- perform spot repairs and blends using the latest industry accepted practices and materials, to the standards of industry;
- demonstrate skill in major body repair, including frame and Unibody repair;
- demonstrate the use of electronic frame measuring systems, during the repair of full frame and Unibody vehicles;
- plan and execute an industry acceptable repair on both full frame and Unibody vehicles, including structural, non-structural, cosmetic and mechanical repairs;
- display the skills needed to apply high-end automotive finishes to a variety of automotive substrates;
- perform a variety of welding processes needed to properly repair vehicles of both steel and aluminum construction, in accordance with I-CAR guidelines;
- demonstrate competency in Collision Repair Estimating, using Mitchells guides, Audatex, and CCC One software.

CAREERS

Employment opportunities include auto body technician, frame technician, auto body mid-tech, painter's 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.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047.

AUTO BODY/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	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 82) (Recommended: COMM-100 or PSY-101)	3

AUTO BODY/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/Safety/First Aid requirement (see page 82) (Recommended: HE-252 or MFG-107)	3

Auto Body/Collision Repair and Refinishing Technology continued…

FIFTH TERM

AB-150	Collision Repair Computerized Estimating - Audatex	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 - CCC ONE	2
AB-280	Collision Repair/CWE	6
WR-101 or WR-121	Communication Skills: Occupational Writing English Composition	3-4
Credits required for degree		*91-92*

* Successful completion of ABR-125 required.

Auto Body/Collision Repair and Refinishing Technology

Career Pathway Certificate

PROGRAM CODE: CC.ABCOLRRTECH

The Auto Body/Collision Repair Refinishing Technology program 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 program 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 qualifies students to apply for I-CAR Pro Level 1 Certification.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the proper selection of tools and materials needed to perform metal straightening and plastic filler repair processes;
- prepare a repaired surface, choose and apply appropriate materials, block sand, clean surface, and apply topcoat, detail;
- repair sheet metal damage, demonstrate panel replacement techniques, identify structural damage, and formulate viable repair processes;
- perform spot repairs and blends using the latest industry accepted practices and materials, to the standards of industry;
- demonstrate skill in major body repair, including frame and Unibody repair;

- perform a variety of welding processes needed to properly repair vehicles of both steel and aluminum construction, in accordance with I-CAR guidelines;
- demonstrate competency in Collision Repair Estimating, using Mitchells guides, and Audatex, and CCC-ONE software.

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.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047.

AUTO BODY/COLLISION REPAIR REFINISHING CAREER PATHWAY CERTIFICATE

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 - Audatex	2
ABR-127*	Collision Repair/Refinishing II	6

THIRD TERM

AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
Credits required for certificate		*44*

*Successful completion of ABR-125 required.

Automotive Service Technology

Associate of Applied Science Degree

PROGRAM CODE: AAS.AUTOSERTECH

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 mechanical studies courses for more in-depth experience. Students may enter the program any term.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- Recommended: COMM-100 Basic Speech Communication or PSY-101 Human Relations)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits-courses with HE, HPE, or PE prefix; Recommended: HE-252 First Aid/CPR/AED or MFG-107 Industrial Safety & First Aid)

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- practice safety precautions to protect the environment, the student, and the vehicle;
- communicate clearly with team members and supervisors;
- conduct yourself on the job with a high degree of professionalism;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern automotive brake systems including, anti-lock systems, traction control systems, and stability control systems;
- diagnose, repair, and service modern suspension systems;
- diagnose, repair, and maintenance of all hybrid systems;
- diagnose and repair symptom based mechanical engine problems, including, cylinder head, valve train; and engine block problems;
- diagnose, repair, and service front and rear wheel drive automatic transmissions;
- diagnose, repair, and service modern fuel and emissions systems;
- diagnose and repair automotive electrical accessory systems;
- diagnose, repair, and service modern heating and air conditioning systems;
- diagnose, repair, and service front and rear wheel drive manual drive train and axle systems.

CAREERS

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

OREGON TECH TRANSFER COURSES

The Automotive Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047.

AUTOMOTIVE SERVICE TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
AM-121	General Auto Repair I	3
AM-129	Electrical Systems	7
AM-130	Brake Systems	7
WINTER TERM		
AM-122	General Auto Repair II	3
AM-131	Chassis Systems	7
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	4
SPRING TERM		
AM-133	Engine Systems	7
AM-223	Hybrid Service Technology	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
SUMMER TERM		
AM-280*	Auto Mechanics/CWE	6

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

FALL TERM		CREDITS
AM-245	Automatic Transmission Systems	7
WLD-102	Introduction to Welding	
or AB-112	Collision Repair Welding I	2
— —	Human Relations requirement (see page 82) (Recommended: COMM-100 or PSY-101)	3
— —	PE/Health/Safety/First Aid requirement (see page 82) (Recommended: HE-252 or MFG-107)	3
WINTER TERM		
AM-243	Fuel & Emission Control Systems	7
AM-244	Advanced Electrical Systems	7
SPRING TERM		
AM-224	Comfort Systems	4
AM-228	Service Shop Management	4
AM-235	Power Transmission Systems	7
Credits required for degree		*94-95*

*May be taken after the first year

Note: Alternative course schedule is available. Contact the Automotive and Welding Department, 503-594-3047 for information.

Under Car Technician - Automatic Transmission

Career Pathway Certificate

PROGRAM CODE: CC.UNDRCARTECAUTO

The Under Car Technician–Automatic Transmission Program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree to provide the student with an opportunity to gain entry level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A2, A3, A4, and C1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine-month program is awarded 4.5 months' equivalency. The AWS requires one year of documented time in trade before testing. These classes comprise an alternate first year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the automotive service industry.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- practice safety precautions to protect the environment, students, and the vehicle;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern suspension systems;
- diagnose, repair, and service front and rear wheel drive manual drive train and axle systems;
- diagnose, repair, and service front and rear wheel drive automatic transmissions.

CAREERS

Manual transmission technician, automatic transmission technician, front-end and alignment technician, drive axle specialist, four-wheel drive service technician, apprentice technician, and service writer.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047.

UNDER CAR TECHNICIAN—AUTOMATIC TRANSMISSION CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
AM-121	General Auto Repair I	3
AM-129	Electrical Systems	7
AM-245	Automatic Transmission Systems	7
WINTER TERM		
AM-122	General Auto Repair II	3
AM-131	Chassis Systems	7
WLD-102	Introduction to Welding	
or AB-112	Collision Repair Welding I	2

SPRING TERM		
AM-228	Service Shop Management	4
AM-235	Power Transmission Systems	7
Credits required for certificate		*40*

ASE ALIGNMENT

AM-131 aligns with ASE A4 Suspension & Steering
AM-228 aligns with ASE C1 Automobile Service Consultant
AM-235 aligns with ASE A3 Manual Drive Train & Axles
AM-245 aligns with ASE A2 Automatic Transmission/Transaxle

Under Car Technician– Manual Transmission

Career Pathway Certificate

PROGRAM CODE: CC.UNDERCARTECMAN

The Under Car Technician–Manual Transmission program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree to provide the student with an opportunity to gain entry level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A3, A4, A5, and C1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine-month program is awarded 4.5 months' equivalency. The AWS requires one year of documented time in trade before testing. These classes comprise an alternate first-year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the Automotive Service industry.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- practice safety precautions to protect the environment, students, and the vehicle;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern automotive brake systems including, anti-locking systems, traction control systems, and stability control systems;
- diagnose, repair, and service modern suspension systems;
- diagnose, repair, and service front and rear wheel drive manual drive train and axle systems.

CAREERS

Manual transmission technician, front-end and alignment technician, brake technician, drive axle specialist, four-wheel drive service technician, apprentice technician, and service writer.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047.

UNDER CAR TECHNICIAN–MANUAL TRANSMISSION CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
AM-121	General Auto Repair I	3
AM-129	Electrical Systems	7
AM-130	Brake Systems	7
WINTER TERM		
AM-122	General Auto Repair II	3
AM-131	Chassis Systems	7
WLD-102	Introduction to Welding	
or AB-112	Collision Repair Welding I	2
SPRING TERM		
AM-228	Service Shop Management	4
AM-235	Power Transmission Systems	7
Credits required for certificate		40

ASE ALIGNMENT

AM-130 aligns with ASE A5 Brakes
AM-131 aligns with ASE A4 Suspension & Steering
AM-228 aligns with ASE C1 Automobile Service Consultant
AM-235 aligns with ASE A3 Manual Drive Train & Axles

Under Hood Technician

Career Pathway Certificate

PROGRAM CODE: CC.UNDERHOODTECH

The Under Hood Technician program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree to provide the student with an opportunity to gain entry level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A1, A6, A7, A8, C1, and L1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine-month program is awarded 4.5 months' equivalency. The AWS requires one year of documented time in trade before testing. These classes comprise an alternate first year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the Automotive Service industry.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- practice safety precautions to protect the environment, the students, and the vehicle;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern fuel and emissions systems;
- diagnose and repair automotive electrical accessory systems;
- diagnose, repair, and service modern heating and air conditioning systems;
- diagnose and repair symptom based mechanical engine problems, including, cylinder head, valve train; and engine block problems.

CAREERS

Diagnostic tune-up technician, electrical and electronics specialist, air conditioning service technician, apprentice technician, and shop supervisor.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047.

UNDER HOOD TECHNICIAN CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
AM-121	General Auto Repair I	3
AM-129	Electrical Systems	7
WLD-102	Introduction to Welding	
or AB-112	Collision Repair Welding I	2
WINTER TERM		
AM-122	General Auto Repair II	3
AM-243	Fuel & Emission Control Systems	7
AM-244	Advanced Electrical Systems	7
SPRING TERM		
AM-133	Engine Systems	7
AM-224	Comfort Systems	4
AM-228	Service Shop Management	4
Credits required for certificate		44

ASE ALIGNMENT

AM-129 and AM-244 align with ASE A6 Electrical/Electronic Systems
AM-133 aligns with ASE A1 Engine Repair
AM-224 aligns with ASE A7 Heating & Air Conditioning
AM-228 aligns with ASE C1 Automobile Service Consultant
AM-243 aligns with ASE A8 Engine Performance, and L1 Advanced Engine Performance Specialist

Basic Engine Technician

Certificate

PROGRAM CODE: CC.BASICENGINE

The Basic Engine Technician program combines Automotive Fundamentals, Small Engine Repair, and General Auto Repair I and II to provide the student with an opportunity to develop essential skills needed to gain entry level employment. This course sequence trains students in the skills necessary to earn industry certifications from the Equipment & Engine Training Council (EETC) in Two Stroke and Four Stroke engine operation as well as small engine electrical systems. Practical aspects of vehicle ownership are also covered so that students can develop good ownership habits such as scheduling periodic maintenance work.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- develop foundational skills needed for entry level employment;
- earn up to three Industry certificates from EETC;
- develop good automobile ownership habits.

Basic Engine Technician continued…

CAREERS

Graduates of this program may find work in the outdoor power equipment and other small engine mechanics fields. There are over 200 regional jobs in outdoor power equipment and other small engine mechanics. Over the next 10 years the projected regional growth is 14%. Program completers may continue their education in the Automotive Service Technology certificate and degree programs at CCC.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu.*

BASIC ENGINE TECHNICIAN CERTIFICATE: 1ST YEAR

FALL TERM		CREDITS
AM-100	Automotive Fundamentals	3
AM-118	Small Engine Repair	3
WINTER TERM		
AM-121	General Auto Repair I	3
SPRING TERM		
AM-122	General Auto Repair II	3
Credits required for degree		*12*

Business

Associate of Applied Science Degree

PROGRAM CODE: AAS.BUSINESS

This AAS degree establishes a foundation for a successful management career while enabling students to explore a wide variety of business topics. The program is designed to enhance skills and employability for students who desire a career path in management as well as those who choose the entrepreneurial path. The AAS in Business permits students to complete certificates in Accounting, Business Management, Human Resource Management, Marketing, Project Management or Retail Management and to apply those credits towards completion of the AAS in Business degree. Students may also select courses from a cross section of the aforementioned disciplines.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate an understanding of fundamental business concepts through the integration of the functional areas of business into a comprehensive plan;
- interpret and present business-related financial information;
- use Microsoft Office applications to create business documents, data files and presentations;
- demonstrate the ability to communicate effectively;
- identify effective human resource practices;
- demonstrate an understanding of key legal concepts as they apply to business, e.g. torts, crimes, ethics, and contracts;
- identify effective interpersonal strategies for individual and group situations.

CAREERS

Career opportunities include managers, coordinators, or supervisors in areas such as project management, human resource management, customer service, or retail management.

OREGON TECH TRANSFER COURSES

The Business Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Sharon Parker, 503-594-3075 or *sharonp@clackamas.edu.*

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121**	English Composition	4
— —	*PE/Health/Safety/First Aid requirement (see page 82)	1
WINTER TERM		
BA-224	Human Resource Management	4
BA-226	Business Law I	4
BA-285*	Human Relations in Business	4
— —	Business program electives	3-6
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
— —	Business program electives	3-4

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-211	Financial Accounting I	4
— —	Business program electives	12
WINTER TERM		
BA-212	Financial Accounting II	4
WR-227	Technical Report Writing	4
— —	Business program electives	6-8

SPRING TERM

BA-213	Decision Making with Accounting Information	4
BA-217	Budgeting for Managers	3
BA-280	Business/CWE	3
— —	Business program electives	4

Credits required for this degree: 90-96

*RELATED INSTRUCTION REQUIREMENTS

Computation: BA-104
Communication: WR-121
Human Relations: BA-285
PE/Health/Safety/First Aid: At least 1 credit
**WRD-098 or placement in WR-121 required

BUSINESS PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Business AAS program or any course from the following:

COURSE		CREDITS
CS-181	CMS Web Development	3
CS-125H	HTML & Web Site Design	3
CS-135S	Microsoft Excel	3
COMM-111	Public Speaking	4
EC-201	Principles of Economics: MICRO	4
EC-202	Principles of Economics: MACRO	4

Complete all AAS Business requirements plus the following to satisfy requirements for the Business Management Certificate:

COURSE		CREDITS
BA-119	Project Management Practices	2
BA-251	Supervisory Management	3

Complete all AAS Business requirements plus the following to satisfy requirements for the Human Resource Management Certificate:

COURSE		CREDITS
BA-208	Employee and Labor Relations	4
BA-229	Employment Law	4
BA-250	Small Business Management	3
BA-254	Basic Compensation & Benefits	4

Complete all AAS Business requirements plus the following to satisfy requirements for the Marketing Certificate:

COURSE		CREDITS
BA-156	Business Forecasting	3
BA-238	Sales	4
BA-239	Advertising	4
BA-261	Consumer Behavior	4

Business Management

Certificate

PROGRAM CODE: CC.BUSMANAGEMENT

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

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate an understanding of fundamental business concepts through the integration of the functional areas of business into a comprehensive plan;
- make informed business decisions based on the use analysis of financial and budgetary data;
- demonstrate an understanding of the functions of leading, planning, organizing, and controlling in an organization;
- identify effective supervisory strategies (e.g. motivation, goal setting, coaching, leadership, etc.) for given individual and group situations;
- demonstrate all the programs learning outcomes for the Management Fundamentals Career Pathway Certificate.

CAREERS

Career opportunities 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 Sharon Parker, 503-594-3075 or *sharonp@clackamas.edu*.

BUSINESS MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121**	English Composition	4
WINTER TERM		
BA-119	Project Management Practices	2
BA-224	Human Resource Management	4
BA-226	Business Law I	4
BA-251	Supervisory Management	3
BA-285*	Human Relations in Business	4
SPRING TERM		
BA-206	Management Fundamentals	4
BA-211	Financial Accounting I	4
BA-217	Budgeting for Managers	3
BA-223	Principles of Marketing	4
BA-280	Business/CWE	3

Credits required for certificate   50

*RELATED INSTRUCTION REQUIREMENTS

Computation: BA-104
Communication: WR-121
Human Relations: BA-285
**WRD-098 or placement in WR-121 required
All courses in this program can be applied to partially satisfy requirements in the Business AAS degree.

Management Fundamentals

Career Pathway Certificate

PROGRAM CODE: CC.MGMTFUND

This program is designed for students who seek a foundation of managerial knowledge to support their advancement toward a career in management.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the ability to communicate effectively;
- identify the various laws that impact employee management practices;
- identify effective supervisory strategies (e.g. motivation, goal setting, coaching, leadership, etc.) for given individual and group situations.

CAREERS

Career opportunities include frontline or entry-level supervisory positions in retail, manufacturing, sales, and service industries.

For information contact Sharon Parker, 503-594-3075 or *sharonp@clackamas.edu.*

MANAGEMENT FUNDAMENTALS CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-217	Budgeting for Managers	3
BA-224	Human Resource Management	4
BA-251	Supervisory Management	3
BA-285	Human Relations in Business	4
WR-121*	English Composition	4
Credits required for certificate		*18*

*WRD-098 or placement in WR-121 required

All courses in this program can be applied to satisfy requirements in the Business Management certificate.

Career & Technical Education (CTE) Licensure Prep

Certificate

PROGRAM CODE: CC.CTEPREP

This program meets the Teacher Standards and Practices Commission (TSPC) professional development requirements for industry experts seeking an Oregon Restricted or Preliminary CTE license to teach in secondary CTE (middle and high school) programs. It also provides professional development for post-secondary CTE (community college) faculty and instructors teaching in registered apprenticeships to improve teaching skills and understanding of the learning process. This certificate provides individuals with educational foundations in classroom and program management and develops skills needed to meet the needs of diverse students and to integrate developmentally appropriate and culturally competent instructional strategies.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- perform in accordance with the legal rights and responsibilities of teachers and students in educational settings;
- create, deliver, and adapt instruction to meet the needs of diverse learners;
- effectively manage classrooms and learning environments;
- compare, contrast, and effectively apply appropriate instructional strategies and assessments;
- apply learning theory to teach in culturally responsive and developmentally appropriate ways;
- analyze elements of quality CTE programs and current issues impacting Career and Technical Education.

CAREERS

This program is designed to provide current and prospective CTE teachers at the secondary and post-secondary levels with foundational skills to be successful educators in their area of professional expertise. Careers related to this certificate program include licensed teachers in middle and high school CTE programs and instructors in community college CTE programs and registered apprenticeship programs.

For information contact Laurette Scott, 503-594-3840 or *laurette@clackamas.edu*

FALL TERM		CREDITS
ED-130	Comprehensive Classroom Management	3
ED-220	Introduction to CTE in Oregon	3
WINTER TERM		
ED-100	Introduction to Education	
or ED-200	Foundations of Education	3-4
ED-229	Learning & Development	3
*ED-169	Overview of Students with Special Needs	
or ED-254	Instructional Strategies for Dual Language Learners	3
SPRING TERM		
ED-131	Instructional Strategies	3
ED-258	Multicultural Education	3
ED-280	Practicum/CWE	6
Credits required for degree		*27-28*

Proof of College (100) level English/Language Arts and Math credits is required for licensure

Completion of ED-113 (fall term) or ED-114 (spring term) is required for the Restricted CTE License

*Completion of both ED-169 and ED-254 is highly recommended for licensure
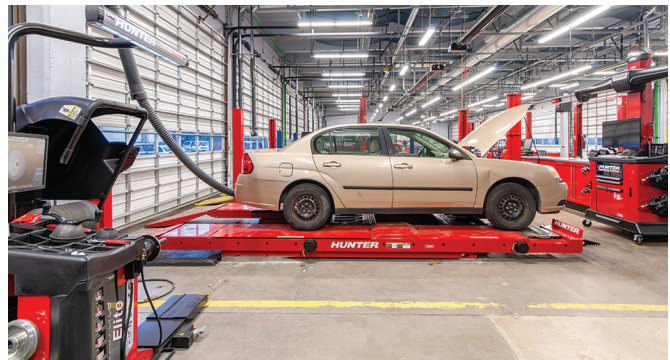
Clinical Laboratory Assistant/ Phlebotomy

Certificate

PROGRAM CODE: CC.CLINLABASSTPHLB

Clinical laboratory assistants serve a diverse ancillary role assisting other laboratory personnel, physicians and patients. Their duties may include specimen collection and handling, data entry, laboratory billing practices, back office skills, and the performance of waived testing according to standard operating procedures. Students are trained in all aspects of 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. See website below for program mission statement.

The CCC Clinical Laboratory Assistant/Phlebotomy (CLA) program is approved through the National Accrediting Agency for Clinical Laboratory Science (NAACLS), 5600 N River Rd, Suite 720, Rosemont, IL, 60018, 773-714-8880, *www.naacls.org*

PROGRAM REQUIREMENTS AND PREREQUISITES

Students who wish to apply to the CLA program are welcome to apply for our fall cohort. The CLA applications may be downloaded from our website.

To determine the availability of applications and the appropriate deadlines for each cohort, please visit the Health Sciences website: *www.clackamas.edu/clinical-lab-assistant*.

Applicants are advised that a high level of dexterity, the ability to multitask, and a high degree of attention to detail are required for the successful completion of this program. For a complete list of Essential Functions please visit the above website.

DURING THE APPLICATION PROCESS, CLA APPLICANTS MUST:

- Meet appropriate placement scores in reading, writing, and math by either taking the placement exams or by providing proof of comparable assessment. The CLA program accepts competencies in writing, math, and reading as measured by CCC placement assessments dated no earlier than 2004, or previous college coursework as documented on official college transcripts. To be eligible to apply, students must show placement by: 1) passing WRD-098 or placement in WR-101; 2) passing WRD-090 or placement in WRD-098.
- Have completed MA-110 Medical Terminology, and MTH-050 Technical Mathematics I or MTH-065 Algebra II. Curriculum prerequisites and requirements may be subject to change. In order to assure students have the most current information, please review the department website.

- Provide; 1) proof of a recent physical examination by a licensed healthcare provider, 2) required immunizations, 3) a current American Heart Association (AHA) or American Safety and Health Institute (ASHI) Healthcare Provider CPR, First Aid card, and complete a criminal history background check and drug testing as arranged by the Health Sciences department. Students may also be subject to a second drug and criminal screen just prior to clinical placement depending on clinical site requirements.

CLA students will be required to participate in unpaid, supervised externships in ambulatory or acute care laboratory settings. For a list of community partners, please visit the website.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication or COMM-218 Interpersonal Communication)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the ability to serve in an entry-level position as a CLA including using correct lab, medical, anatomical terminology to effectively and appropriately communicate, both verbally and non-verbally in the health-care setting;
- following SOP, demonstrate proficiency in all types of blood and body fluid collection techniques and the skill to prepare the specimens for analysis displaying effective anatomical understanding;
- perform and evaluate the preparation and use of appropriate reagents, standards and controls with the entry-level scope of practice;
- understand, apply and communicate state and national laboratory regulations, including infection control, health and safety, quality management and ethical considerations;
- perform and record vital sign measurements using information systems as well as other forms of documentation as needed;
- identify and report potential pre-analytical, analytical, and post-analytical errors, demonstration of the correct use of quality control.

CLINICAL LABORATORY ASSISTANT/PHLEBOTOMY APPLICATION REQUIREMENTS

Application packets with admission procedures and requirements are available online: *www.clackamas.edu/clinical-lab-assistant*.

Clinical Laboratory Assistant/Phlebotomy continued…

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.

Clinical Laboratory Assistant – Oregon Tech BS Clinical Laboratory Science

OREGON TECH TRANSFER COURSES

The Clinical Laboratory program, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Science in Clinical Laboratory Science degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For more information, contact: *healthsciences@clackamas.edu*.

CLINICAL LABORATORY ASSISTANT/PHLEBOTOMY CERTIFICATE PREREQUISITES

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, please review the department website.

COURSE		CREDITS
MA-110	Medical Terminology	4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	4

CLINICAL LABORATORY ASSISTANT/PHLEBOTOMY CERTIFICATE

FALL TERM		CREDITS
BI-120*	Introduction to Human Anatomy and Physiology	4
CLA-100	Introduction to Health Care	2
CLA-101	Clinical Laboratory Assistant Skills I	3
CLA-101L	Clinical Laboratory Assistant Skills Lab I	1
CLA-118	Phlebotomy for Clinical Laboratory Assistants	1
CLA-118L	Phlebotomy for Clinical Laboratory Assistant Lab	1
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

WINTER TERM		
CLA-102	Clinical Laboratory Assistant Skills II	3
CLA-102L	Clinical Laboratory Assistant Skills Lab II	1
CLA-115	Laboratory Administrative Skills	2
CLA-119	Laboratory/Phlebotomy Practicum	3
CLA-130	Specimen Collection	1
CS-120	Survey of Computing	4

SPRING TERM		
CLA-103	Clinical Laboratory Assistant Skills III	3
CLA-103L	Clinical Laboratory Assistant Skills Lab III	1
CLA-120	Laboratory/Phlebotomy Practicum II	4
CLA-125	Introduction to Clinical Research	2
COMM-100	Basic Speech Communication	
or COMM-111	Public Speaking	
or COMM-218	Interpersonal Communication	3-4
PSY-101	Human Relations	3
Credits required for certificate		*45-47*

*Additional options to meet biology requirement: pass BI-101 & BI-102 with C or better or successfully complete the entire BI-231, BI-232, BI-233, Anatomy & Physiology series.

Current First Aid card and Healthcare Provider level CPR (AHA or ASHI) card 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 take a drug test.

All clinical practicum courses are Pass/No Pass. CLA-130 may be taken for either a letter grade or pass/no pass option. All other courses are letter grades only 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.

Individuals who have been found guilty of a felony or pleaded guilty to a felony may not be eligible for clinical practicum placement or be eligible to take the National exams.

Basic Health Sciences

Career Pathway Certificate

PROGRAM CODE: CC.BASICHEALTH

The Basic Health Sciences Career Pathway Certificate prepares students for a career in health care by introducing them to the soft skills, communication skills and terminology necessary to interact within a breadth of health sciences disciplines. Students will be further exposed to the important safety and confidentiality regulations in the field and will have the opportunity to earn certifications in HIPAA and blood-borne pathogens. Courses in this Career Pathway Certificate fulfill requirements for the Clinical Laboratory Assistant/Phlebotomy program and are either required or encouraged for all other Health Sciences programs at Clackamas Community College.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the ability to serve in an entry level position using correct laboratory, medical, and anatomical terminology to effectively and appropriately communicate, both verbally and nonverbally in healthcare settings;
- understand, apply, and communicate state and national laboratory regulations, including infection control, health and safety, and ethical considerations.

CAREERS

Students who successfully complete this pathway will be prepared to assist and interact with healthcare professionals. Their duties may include data input, intake/reception, and other administrative duties as assigned in a variety of healthcare and clinical settings.

For information contact Marilyn Braught, 503-594-0634 or *marilyn.braught@clackamas.edu*.

BASIC HEALTH SCIENCES CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
CLA-100	Introduction to Health Care	2
MA-110	Medical Terminology	4
MTH-065	Algebra II	4
WR-121	English Composition	4
PSY-101	Human Relations	3
Credits required for degree		*17*

Computer-Aided Manufacturing

Associate of Applied Science Degree

PROGRAM CODE: AAS.COMPAIDEMFG

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- See course list on page 82)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits - MFG-107 Industrial Safety & First Aid)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM, STUDENTS SHOULD BE ABLE TO:
- set-up and operate manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- set-up and operate CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies.
- apply computer software applications to produce manufacturing related documents, create CAD models, and generate CAM programs for machining processes;
- apply knowledge of programming electronic systems to improve industrial efficiency;
- apply knowledge of materials, physics and mathematics to effectively machine industrial materials;
- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

CAREERS

Career opportunities may include CNC programmer and operator, CAD technician, manufacturing engineering technician and CAD/CAM technician.

For information contact Mike Mattson, 503-594-3322 or *mattsonm@clackamas.edu*.

MANUFACTURING ENGINEERING TECHNOLOGY (OREGON TECH TRANSFER COURSES)

The Industrial Technology Department, in partnership with Oregon Tech, offers a significant number of transferable classes into Oregon Tech's Manufacturing Engineering Technology degree program.

Contact the Industrial Technology Department for more information, 503-594-3318.

COMPUTER-AIDED MANUFACTURING
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FIRST TERM		CREDITS
CDT-102	Sketching & Problem Solving	3
MFG-111	Machine Tool Fundamentals I	6
MTH-050**	Technical Mathematics I	4
WR-101**	Communication Skills: Occupational Writing	3
SECOND TERM		
CDT-108A	Introduction to SolidWorks	3
MFG-105	Dimensional Inspection	2
MFG-109	Computer Literacy for Technicians	3
MFG-112	Machine Tool Fundamentals II	6
MTH-080**	Technical Mathematics II	3
THIRD TERM		
CDT-225	Advanced SolidWorks	3
MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-113	Machine Tool Fundamentals III	6
MFG-221	Materials Science	3
— —	CAD/CAM program elective	3

COMPUTER-AIDED MANUFACTURING
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
CDT-223	Inventor Fundamentals	3
MFG-130	Basic Electricity I	3
MFG-201	CNC I: Set-Up and Operation	4
MFG-204	Computer-Aided Manufacturing I	4
— —**	Human Relations requirement (see page 82)	3
FIFTH TERM		
MFG-107	Industrial Safety & First Aid	3
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-209	Programming & Automation for Manufacturing	3
SIXTH TERM		
MET-170	Introduction to Manufacturing Processes	3
MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	3
MFG-219	Robotics	3
MFG-280	Manufacturing Technology/CWE	4
Credits required for degree		*98*

Computer-Aided Manufacturing continued…

COMPUTER-AIDED MANUFACTURING PROGRAM ELECTIVES

Any course with a CDT, EET, MFG, RET or WLD prefix not included in the Computer-Aided Manufacturing program.

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 Student Services for the transfer requirements of the specific advanced program or school.

Computer & Network Administration

Certificate
Associate of Applied Science Degree

PROGRAM CODE: AAS.COMPNETADMIN, CC.COMPNETADMIN

The Computer & Network Administration program prepares students for technical support careers specializing in network administration and maintenance. Students may earn either a one-year Certificate of Completion or two-year Associate of Applied Science degree. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

For students interested in pursuing a bachelor's degree, the Computer & Network Administration Associate of Applied Science articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completed course work for CS-120 Survey of Computing or placement in CS-121 Computer Applications, MTH-060 Algebra I or placement in MTH-065 Algebra II, and WRD-098 Introductory Reading & Writing 2: College Preparation or placement in WR-121 English Composition. This is an open program. Students may take any class in the program for which they have completed the requisites.

RELATED INSTRUCTION OUTCOMES

Computation (3 credits- See page 82 for course list)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit- courses with HE, HPE, or PE prefix) (NOT REQUIRED FOR THE CERTIFICATE)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Computer & Network Administration AAS Degree

Upon successful completion of this program, students should be able to:
- demonstrate all the program learning outcomes of the Computer & Network Administration Certificate;
- operate, install, manage, and troubleshoot major server operating systems;
- understand advanced network technologies and implement intricate internetwork infrastructures;
- understand and demonstrate basic computer and network security principles;
- develop, implement, and document an integrated information systems project;
- communicate the importance of professional and ethical responsibilities and be aware of codes of conduct and other sources of guidance for professionally ethical decision making;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

PROGRAM OUTCOMES
Computer & Network Administration Certificate Degree

Upon successful completion of this program, students should be able to:
- explain basic troubleshooting processes and procedures from initial diagnosis to final documentation and reporting,
- explain and demonstrate how to interact and communicate effectively with people of different technical backgrounds and professional positions;
- operate, install, manage, and troubleshoot major desktop operating systems;
- identify, install, and troubleshoot computer and network hardware components;
- understand fundamental network technologies and implement a basic local area network;
- exhibit good teamwork skills and serve as effective members of project teams.

CAREERS

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

For information contact Rick Carino, 503-594-3167, or *rcarino@clackamas.edu*.

OREGON TECH TRANSFER COURSES

The Computer Science program, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

COMPUTER & NETWORK ADMINISTRATION CERTIFICATE

FALL TERM		CREDITS
CS-140	Introduction to Operating Systems	4
CS-160	Computer Science Orientation	4
CS-225	Computer End User Support	3
CS-227	Computer Hardware & Repair	4

WINTER TERM		
CS-151	Networking I	4
CS-228	Computer OS Maintenance & Repair	4
CS-240W	Windows Desktop Administration	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

SPRING TERM		
CS-152	Networking II	4
CS-240L	Linux Administration I	4
CS-279W	Windows Server Administration	4

SUMMER TERM		
CS-125H	HTML & Web Site Design	3
CS-280	Computer Science/CWE	3
— —	Computation requirement (see page 82)	3
— —	Human Relations requirement (see page 82)	3-4
Credits required for certificate		*53-55*

COMPUTER & NETWORK ADMINISTRATION ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

COMPUTER & NETWORK ADMINISTRATION ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CS-135DB	Microsoft Access	3
CS-280	Computer Science/CWE	3
— —	Computer & Network Administration program elective	6-8
— —	PE/Health/Safety/First Aid requirement (see page 82)	1

WINTER TERM		
CS-240M	macOS Administration	3
CS-275	Database Design	3
CS-284	Network Security	3
CS-288W	Windows Network Administration	4

SPRING TERM		
CS-280	Computer Science/CWE	3
CS-289	Web Server Administration	4
CS-297N	Network Capstone	4
— —	Computer & Network Administration program elective	3-4
Credits required for degree		*93-98*

COMPUTER & NETWORK ADMINISTRATION PROGRAM ELECTIVES

Complete 9-12 credits from the following:

COURSE		CREDITS
BA-101	Introduction to Business	
or BA-103	Business Strategies for Computer Consultants	
or BA-120	Project Management Fundamentals	3-4
BA-131	Introduction to Business Computing	4
BT-177	Microsoft Project	3
— —	Any computer science course numbered CS-125 or higher	3-4

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

Computer Application Specialist

Certificate

PROGRAM CODE: CC.COMPAPPSPECIAL

The Computer Application Specialist program prepares students for a variety of technical support careers including help desk, training, and design positions. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative work experience (CWE) is supervised real-world experience that supplements the academic classroom environment.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completed course work for CS-120 Survey of Computing or placement in CS-121 Computer Applications, MTH-060 Algebra I or placement in MTH-065 Algebra II, and WRD-098 Introductory Reading & Writing 2: College Preparation or placement in WR-121 English Composition. This program is an open program, meaning that students may take any class in the program for which they have completed the prerequisite.

RELATED INSTRUCTION OUTCOMES

Computation (3 credits- See page 82 for course list)
• Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
• Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- See page 82 for course list)
• Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Computer Application Specialist Certificate Degree

Upon successful completion of this program, students should be able to:

• operate, install, manage, and troubleshoot major desktop operating systems;

• apply sophisticated word processing and spreadsheet development techniques and provide support to businesses using word processing and spreadsheet applications;

• use HTML and CSS, along with current web editing software, to create standards-compliant websites or support a front-end web development team;

• integrate into a help desk or IT support team to provide professional customer service and application training;

• exhibit good teamwork skills and serve as effective members of project teams;

• articulate and justify technical solutions to an audience through oral, written, and graphical communication.

Computer Application Specialist continued…

CAREERS

Career opportunities 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 Diane Sargent, 503-594-3830 or *dianes@clackamas.edu.*

COMPUTER APPLICATION SPECIALIST CERTIFICATE

FALL TERM		CREDITS
CS-140	Introduction to Operating Systems	4 CS-160
Computer Science Orientation		4
CS-227	Computer Hardware & Repair	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
CS-135S	Microsoft Excel	3
CS-135W	Microsoft Word	3
CS-151	Networking I	4
CS-240W	Windows Desktop Administration	3
SPRING TERM		
BA-103	Business Strategies for Computer Consultants	3
CS-135DB	Microsoft Access	3
CS-225	Computer End User Support	3
CS-240L	Linux Administration I	4
SUMMER TERM		
CS-125H	HTML & Web Site Design	3
CS-280	Computer Science/CWE	3
— —	Computation requirement (see page 82)	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate:		*53-54*

Criminal Justice

Associate of Applied Science Degree

PROGRAM CODE: AAS.CRIMJUSTICE

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-098 College Math Foundations)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- CJA-250- Reporting, Recording & Testifying)
- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1 course- HPE-296 Health and Fitness for Criminal Justice)
- Use effective life skills to improve and maintain mental and physical wellbeing

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- identify and define each step in the criminal justice process, and critically analyze how a case proceeds through the system, including landmark U.S. Supreme court decisions;
- explain the functions of law enforcement and corrections in the United States in terms of historical roots, structure and contemporary issues;
- demonstrate knowledge of ethical practices in educational and professional settings;
- recognize how criminal justice professionals work effectively within a diverse society;
- identify causes and indicators of crime and their effect on the criminal justice system's response;
- demonstrate effective verbal communication skills in a criminal justice setting;
- demonstrate effective written communication skills in a criminal justice setting.

CAREERS

Career opportunities 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 Sharron Furno, 503-594-6224 or *sharron.furno@clackamas.edu.*

CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
MTH-098	College Math Foundations	4
WR-121	English Composition	4
WINTER TERM		
CJA-101	Criminology	
or CJA-201	Juvenile Delinquency	4
CJA-120	Introduction to Courts	3
CJA-203	Crisis Intervention	3
LIB-101	Introduction to Library Research	1
WR-122	English Composition	4
SPRING TERM		
CJA-130	Introduction to Corrections	3
CJA-243	Drugs, Crime and the Law	3
HD-161	Multicultural Awareness	3
PSY-219	Introduction to Abnormal Psychology	4

CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-210	Criminal Investigation I	3
CJA-214	Intimate Partner Violence	3
CJA-223	Criminal Justice Ethics	3
HDF-260	Understanding Child Abuse and Neglect	4
__ __	Criminal Justice program electives	3-4

WINTER TERM		
CJA-170	Careers in Criminal Justice	3
CJA-211	Criminal Investigation II	3
CJA-222	Procedural Law	3
HPE-296	Health and Fitness for Criminal Justice	3
__ __	Criminal Justice program electives	3-4

SPRING TERM		
CJA-200	Community Policing	3
CJA-212	Criminal Investigation III	3
CJA-250	Reporting, Recording & Testifying	4
CJA-270	Criminal Justice Capstone	3
CJA-280	Criminal Justice/Corrections/CWE	
or HD-102	Service Learning Experience	3
Credits required for degree		*90-92*

CRIMINAL JUSTICE PROGRAM ELECTIVES

Any CJA course not included in the Criminal Justice AAS program, or any of the following:

COURSE		CREDITS
GRN-183	Death and Dying	3
HST-131	History of Crime & Punishment in Western Civilization	4

Criminal Justice, Corrections Option

Associate of Applied Science Degree

PROGRAM CODE: AAS.CORRECTIONS

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

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-098 College Math Foundations)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- CJA-250 Reporting, Recording & Testifying)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- HPE-296 Health and Fitness for Criminal Justice)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- identify and define each step in the criminal justice process, and critically analyze how a case proceeds through the system, including landmark U.S. Supreme Court decisions;
- explain the functions of law enforcement and corrections in the United States in terms of historical roots, structure and contemporary issues;
- identify conditions and personal characteristics that are specific to working with offenders in an institutional or community setting, and develop strategies for coping with those conditions;
- demonstrate knowledge of ethical practices in educational and professional settings;
- recognize how criminal justice professionals work effectively within a diverse society;
- identify causes and indicators of crime and their effect on the criminal justice system's response;
- analyze contemporary issues in the adult and juvenile corrections systems in the United States and outline possible responses to those issues;
- demonstrate effective verbal communication skills in a criminal justice setting;
- demonstrate effective written communication skills in a criminal justice setting.

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 more information, contact Sharron Furno 503-594-6224 or *sharron.furno@clackamas.edu*

CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
MTH-098	College Math Foundations	4
WR-121	English Composition	4

WINTER TERM		
CJA-101	Criminology	
or CJA-201	Juvenile Delinquency	4
CJA-120	Introduction to Courts	3
CJA-203	Crisis Intervention	3
LIB-101	Introduction to Library Research	1
WR-122	English Composition	4

SPRING TERM		
CJA-130	Introduction to Corrections	3
CJA-243	Drugs, Crime and the Law	3
HD-161	Multicultural Awareness	3
PSY-219	Introduction to Abnormal Psychology	4

Criminal Justice, Corrections Option continued…

CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM

		CREDITS
CJA-223	Criminal Justice Ethics	3
CJA-252	Introduction to Restorative Justice	3
HDF-260	Understanding Child Abuse and Neglect	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
— —	Corrections program elective	3-4

WINTER TERM

CJA-134	Correctional Institutions	3
CJA-170	Careers in Criminal Justice	3
HPE-296	Health and Fitness for Criminal Justice	3
HS-156	Conducting Human Service Interviews	3
HS-211	Infectious Diseases and Harm Reduction	1
HS-216	Group Counseling Skills	3

SPRING TERM

CJA-232	Case Management	3
CJA-215	Sexual Abuse and Human Trafficking	3
CJA-250	Reporting, Recording & Testifying	4
CJA-270	Criminal Justice Capstone	3
CJA-280 or HD-102	Criminal Justice/Corrections/CWE Service Learning Experience	3
Credits required for degree		*91-92*

CORRECTIONS PROGRAM ELECTIVES

Any CJA course not included in the Corrections program, or any of the following:

COURSE		CREDITS
GRN-183	Death and Dying	3
HST-131	History of Crime & Punishment in Western Civilization	4

Juvenile Corrections

Certificate

PROGRAM CODE: CC.CORRECTIONSJUV

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-098 College Math Foundations)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- HS-156 Conducting Human Service Interviews)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- explain the function of juvenile corrections in the United States in terms of historical roots, structure and contemporary issues;
- determine causes of juvenile delinquency, and identify system responses based upon the various theories of causation;
- identify conditions that are specific to working with juvenile offenders in an institutional or community setting, and develop strategies for coping with those conditions;
- analyze contemporary issues in the juvenile corrections system in the United States and outline possible responses to those issues;
- communicate effectively both verbally and in writing.

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 more information, contact Sharron Furno 503-594-6224 or *sharron.furno@clackamas.edu*

JUVENILE CORRECTIONS CERTIFICATE

FALL TERM

		CREDITS
CJA-252	Introduction to Restorative Justice	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
MTH-098	College Math Foundations	4
WR-121	English Composition	4

WINTER TERM

CJA-201	Juvenile Delinquency	4
CJA-203	Crisis Intervention	3
HS-156	Conducting Human Service Interviews	3
LIB-101	Introduction to Library Research	1
PSY-215	Introduction to Developmental Psychology	4

SPRING TERM

CJA-130	Introduction to Corrections	3
CJA-232	Case Management	3
CJA-280	Criminal Justice/Corrections/CWE	3
CWE-281	Cooperative Work Experience Seminar	0
HD-161	Multicultural Awareness	3
HDF-260	Understanding Child Abuse and Neglect	4
Credits required for certificate		*45*

Dental Assistant

Certificate

PROGRAM CODE: CC.DENTALASST

The Dental Assistant (DA) 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).

PROGRAM REQUIREMENTS AND PREREQUISITES

This limited entry program requires the applicant to meet the program requirements prior to being formally admitted into the program. The requirements are to be completed in a four-phase process, with specific timelines for each phase. Information regarding specific requirements and timelines are located at *www.clackamas.edu/dental-assistant*.

The applicant must follow and complete all steps to be invited to continue through each phase of the admission process, with the final phase resulting in the opportunity to be invited for admission.

DA students will participate in unpaid, supervised externships in the dental care setting.

Disclaimer: Clinical training is required in order to complete certain Health Sciences programs offered by Clackamas Community College (CCC). Although CCC does not restrict program entry based on age, some college partners, such as healthcare agencies, organizations and clinics, require students to be at least 18 years of age before they can participate in clinical training. Students who intend to enroll prior to reaching 18 years of age should consult with the appropriate Health Sciences program director or administrator to determine when clinical training begins for their program and to understand any limitations.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:
- demonstrate proficiency in exposing, processing, and mounting dental radiographs and digital imaging;
- apply current concepts of occupational safety hazards, infection control and aseptic procedures to promote a safe work environment and prevent disease transmission;
- perform entry-level chairside dental assisting skills;
- demonstrate basic competencies in dental administrative practices;
- assist with medical emergencies in the dental office.

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 online at *www.clackamas.edu/dental-assistant*.

For more information, contact *healthsciences@clackamas.edu*.

DENTAL ASSISTANT CERTIFICATE

FIRST TERM		CREDITS
DA-101	Dental Radiology I	2
DA-101L	Dental Radiology I Lab	1
DA-104	Clinical Procedures I	2
DA-104L	Clinical Procedures I Lab	1
DA-107	Dental Materials I	2
DA-107L	Dental Materials I Lab	1
DA-110	Clinical Practicum I	1
DA-115	Dental Science	2
DA-125	Dental Infection Control	2
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
SECOND TERM		
DA-102	Dental Radiology II	2
DA-102L	Dental Radiology II Lab	1
DA-105	Clinical Procedures II	2
DA-105L	Clinical Procedures II Lab	1
DA-108	Dental Materials II	2
DA-108L	Dental Materials II Lab	1
DA-120	Clinical Practicum II	5
PSY-101	Human Relations	3
THIRD TERM		
DA-106	Clinical Procedures III	2
DA-106L	Clinical Procedures III Lab	1
DA-130	Clinical Practicum III	8
DA-135	Pharmacology/Medical Emergencies	2
DA-145	Dental Office Procedures	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	4
Credits required for certificate		*53-54*

Dental lab schedules (am/pm) are based on lottery. Information will be provided at orientation.

Current American Heart Association (AHA) BLS Provider (provider level CPR) and First Aid (AHA Heartsaver) certification are required during practicums. 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.

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.

Digital Media Communications

Associate of Applied Science Degree

PROGRAM CODE: AAS.DMC1

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

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher or CS-161 Computer Science I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication or PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- produce media that demonstrates preparedness for entry into a field related to one of the DMC focus areas and present the work for potential professional opportunities;
- critically analyze and discuss digital media works in the context of mass media and society;
- demonstrate an awareness of ethical and legal consid- erations involved when creating digital media works; including basic professional skills related to documenta- tion and rights licensing for copyright, fair use, etc.;
- complete digital media video projects illustrating profes- sional entry-level competence in planning, production, sound/music, and editing tools and techniques;
- create a digital media portfolio in a way that showcases specialized skills in one or more of the following focus areas: Motion Graphics & Computer Animation, Jour- nalism, Video Production, and Music & Sound for Media.

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, digital media 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 digital media, 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.

OREGON TECH TRANSFER COURSES

The Art Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Nora Brodnicki, 503-594-3036 or *norab@clackamas.edu.*

DIGITAL MEDIA COMMUNICATIONS
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
ART-115	Basic Design: 2-Dimensional Design	4
ART-262	Digital Photography & Photo-Imaging	3
DMC-100	Introduction to Media Arts	3
WR-121	English Composition	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1

WINTER TERM		
COMM-100 or PSY-101	Basic Speech Communication Human Relations	3
DMC-104	Digital Video Editing	4
MTH-065 or MTH-050 or higher level math or CS-161	Algebra II Technical Mathematics I Computer Science I	4
— —	Digital Media Communications program electives	4

SPRING TERM		
J-211 or COMM-212	Mass Media & Society Mass Media & Society	4
— —	Focus Area courses	4-8
— —	Digital Media Communications program electives	8

DIGITAL MEDIA COMMUNICATIONS
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
MUS-247 or DMC-247	Sound for Media Sound for Media	3
— —	Focus Area courses	8-10
— —	Digital Media Communications program electives	4

WINTER TERM		
DMC-291	Digital Media Communications Portfolio Project I	3
— —	Focus Area courses	13-15

SPRING TERM		
BA-101	Introduction to Business	4
DMC-280	Digital Media Communications/CWE	3
DMC-292	Digital Media Communications Portfolio Project II	3
— —	Focus Area course	4
Credits required for degree		*90*

ADDITIONAL COURSES FROM FOCUS AREA

Complete all courses from one of the following Focus Areas

MOTION GRAPHICS & COMPUTER ANIMATION

COURSE		CREDITS
DMC-106	Animation & Motion Graphics I	3
DMC-107	Animation & Motion Graphics II	3
ART-131	Introduction to Drawing	4
DMC-221	Introduction to 2D Animation: Design & Techniques	3
DMC-222	Advanced 2D Animation: Design & Techniques	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
MUS-171	Sound Design	2
WR-265	Digital Storytelling	4

JOURNALISM

COURSE		CREDITS
ART-120	Creativity/Ideation	
or MUS-171	Sound Design	2
ART-225	Computer Graphics I	3
J-134	Photojournalism	4
J-215	College Newspaper: Writing & Photography	3
J-216	Writing for Media	4
J-220	Pod, Broad and Social - Journalism Across Platforms	
or DMC-230	Documentary Film Production	4
J-226	Introduction to College Newspaper: Design & Production	4
WR-240	Introduction to Creative Writing: Nonfiction	4
or WR-265	Digital Storytelling	4

VIDEO PRODUCTION

COURSE		CREDITS
DMC-106	Animation & Motion Graphics I	3
ART-120	Creativity/Ideation	
or MUS-171	Sound Design	2
DMC-205	Directing for Film & Video	3
DMC-230	Documentary Film Production	4
DMC-264	Digital Filmmaking	4
DMC-265	Advanced Digital Filmmaking	4
ENG-194	Introduction to Film	
or DMC-194	Introduction to Film	4
WR-262	Introduction to Screenwriting	4

MUSIC & SOUND FOR MEDIA

COURSE		CREDITS
DMC-242	Field Recording for Media	1
MUS-101	Music Fundamentals	3
MUS-106	Audio Recording at Home	
or MUS-149	Advanced Pro Tools Editing Techniques	1
MUS-107	Introduction to Audio Recording I	3
MUS-108	Introduction to Audio Recording II	3
MUS-141	Introduction to the Music Business	3
MUS-142	Introduction to Electronic Music I: MIDI	3
MUS-143	Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX	3
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-147	Music, Sound & Moviemaking	1
MUS-170	Introduction to Scoring Music for Media	2
MUS-171	Sound Design	2

DMC PROGRAM ELECTIVES

Additional selected electives must be from different subject areas, from the following list of prefixes:
ART, BA, COMM, CS, DMC, ENG, J, MUS, TA, or WR

Entry Level Journalist

Career Pathway Certificate

PROGRAM CODE: CC.ELVLJRNLST

The Entry Level Journalist certificate prepares students for entry level positions in the field of digital media and journalism. Students attain knowledge and learn skills to seek careers in creative and support professions related to digital media and broadcast journalism, such as visual and audio editing, digital media production, post production, weblog and podcast writing and production, broadcast reporting and electronic news gathering.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- display preparedness for an entry-level position in the field of journalism by orchestrating multiple news teams, generating newsworthy story ideas, and checking content for problem with libel and newsworthiness;
- demonstrate video production skills and understanding in broadcast journalism by managing a news crew to follow up and record video news stories, editing video news stories, compressing video into needed formats, uploading and updating video news stories onto an internet server;
- demonstrate skills and understanding in journalism by writing news stories and taking photographs for publication in the weekly newspaper, working with a peer group toward a common goal, conducting interviews in a professional manner, synthesizing Information gathered from sources to put together news articles, writing photo captions with no errors, researching, collecting and evaluating information for use in news stories, practicing ethical journalism in gathering information, and processing advertising contracts;
- demonstrate skills and understanding in digital video editing which include logging and capturing raw video, cutting video sequences into individual shots, assembling shots into cohesive and meaningful order within a timeline, generating text to place into video, adjusting audio levels and apply audio transitions and color correction, discuss the historical cultural impact of the language of film and how that impacts present-day editing decisions, apply established editing techniques and style to a creative video editing project using Premiere Pro, create a digital slideshow, produce an audio news story, design and maintain a working news website.

CAREERS

Career opportunities include work in radio, television stations, motion picture industry, as well as advertising and promotions.

For information contact Melissa Jones, 503-594-3261 or *melissaj@clackamas.edu*.

Entry Level Journalist continued…

ENTRY LEVEL JOURNALIST CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
J-220	Pod, Broad and Social - Journalism Across Platforms	4
WR-121	English Composition	4
WINTER TERM		
COMM-100 or PSY-101	Basic Speech Communication Human Relations	3
DMC-230	Documentary Film Production	4
J-215	College Newspaper: Writing & Photography	3
J-216	Writing for Media	4
SPRING TERM		
DMC-291	Digital Media Communications Portfolio Project I	3
J-134	Photojournalism	4
J-211	Mass Media & Society	4
J-226	Introduction to College Newspaper: Design & Production	4
Credits required for certificate		*44*

Video Production Technician

Career Pathway Certificate

PROGRAM CODE: CC.VIDEOPRODTECH

The Video Production Technician certificate prepares students for entry level positions in the field of video production. Students attain knowledge and learn skills to seek careers in creative and support professions related to video production, such as visual and audio editing, production, post production, sound design, duplication production assistant, camera operators, digital media artists and animators, titling, and motion graphics.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- create and produce a work by logging and capturing raw video, cutting video sequences into individual shots, generating text to place into video and using skills with software to produce a professionally edited video;
- demonstrate skills and understanding in visual editing by assembling shots into cohesive and meaningful order within a timeline and use effects such as video transitions and color correction;
- demonstrate skills and understanding in audio editing by adjusting audio levels and apply audio crossfades;
- demonstrate competency in entry-level positions in the field of video production;
- display skills and knowledge of software used in the digital media industry by using the software to create the work and using advanced techniques like, compositing multiple video clips together.

CAREERS

Career opportunities include audio and video equipment technicians; broadcast technician; camera operators; film/video editor; media and communication equipment workers; media and communication workers; and digital media artists and animators.

For information contact Mark Devendorf, 503-594-6247 or *mark.devendorf@clackamas.edu.*

VIDEO PRODUCTION TECHNICIAN CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
DMC-247 or MUS-247	Sound for Media Sound for Media	3
DMC-264	Digital Filmmaking	4
WINTER TERM		
DMC-106	Animation & Motion Graphics I	3
COMM-100 or PSY-101	Basic Speech Communication Human Relations	3
WR-121	English Composition	4
SPRING TERM		
BA-101	Introduction to Business	4
DMC-242	Field Recording for Media	1
DMC-291 or DMC-292	Digital Media Communications Portfolio Project I Digital Media Communications Portfolio Project II	3
WR-262	Introduction to Screenwriting	4
Credits required for certificate		*36*

Early Childhood Education & Family Studies

Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.EARLYCHILDFAM, CC.ECEFS

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

Students must obtain a First-Aid certificate with infant-toddler CPR by the end of the first year.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- ED-258 Multicultural Education)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (2-3 credits-courses with HE, HPE, or PE prefix) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Early Childhood Education & Family Studies AAS Degree

Upon successful completion of this program, students should be able to:

- promote children's development and learning by creating and maintaining environments that are healthy, respectful, supportive and challenging for each child;
- build family and community partnerships based on understanding and valuing the complex characteristics of children's families and communities;
- observe, document and assess young children;
- implement developmentally effective approaches, depending on children's ages, characteristics and the settings within which teaching and learning occurs;
- use content knowledge to build meaningful curriculum by designing, implementing and evaluating experiences that promote positive development and learning for each and every young child;
- identify and conduct themselves as members of the early childhood profession and be continuous collaborative learners.

PROGRAM OUTCOMES
Early Childhood Education & Family Studies Certificate

Upon successful completion of this program, students should be able to:

- promote children's development and learning by collaborating to create healthy, respectful and supportive environment;
- respect, support and communicate with families;
- observe and document young children;
- define and understand developmentally effective approaches, depending on the children's ages, characteristics and the setting within which teaching and learning occur;
- use content knowledge to understand curriculum by designing and implementing experiences that promote positive development and learning for each and every young child;
- identify and conduct themselves as members of the early childhood community.

CAREERS

After completing the two-year AAS in Early Childhood Education & Family Studies, students will be prepared to work in a variety of educational settings as lead teacher in private and public early learning programs serving infants, toddlers, and preschoolers and as teacher assistants in kindergarten – 3rd grade classrooms. 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 Dawn Hendricks, 503-594-6158 or *dawn.hendricks@clackamas.edu*

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES CERTIFICATE

SUMMER TERM		CREDITS
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or MTH-098	College Math Foundations	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

FALL TERM		
ECE-150	Introduction to Early Childhood Education & Family Studies	3
ECE-235	Nutrition, Music & Movement in Early Childhood Education	3
ED-100	Introduction to Education	4
HDF-225	Prenatal, Infant & Toddler Development	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	2-3

WINTER TERM		
ECE-121	Observation and Guidance I in ECE Settings	4
ECE-154	Language & Literacy Development	3
ECE-240	Environments and Curriculum Planning	3
HDF-247	Preschool Child Development	3

SPRING TERM		
ECE-179	The Professional in Early Childhood Education and Family Studies	2
ECE-221	Observation & Guidance II in ECE Settings	4
ECE-280	Early Childhood Education/CWE	3
ED-258	Multicultural Education	3
HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family, & Intimate Relations	3-4
Credits required for certificate		*50-53*

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		
ECE-239	Helping Children and Families Cope with Stress	3
ECE-241	Environments and Curriculum Planning: Infants and Toddlers	3
HDF-260	Understanding Child Abuse and Neglect	4
— —	Early Childhood Education program electives	2

Early Childhood Education & Family Studies……

WINTER TERM

ECE-289	The Project Approach in Early Childhood Education	1
ECE-291	Practicum II	4
ED-169	Overview of Students with Special Needs	3
ED-254	Instructional Strategies for Dual Language Learners	3
— —	Early Childhood Education program electives	3

SPRING TERM

ECE-177	Maximizing the Outdoors in ECE Curriculum	3
ECE-292	Practicum III	4
ED-114	Instructional Strategies in Math & Science	3
ED-246	School, Family & Community Relations	4
Credits required for degree		*90-93*

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
COMM-100	Basic Speech Communication	3
COMM-140	Introduction to Intercultural Communication	4
ECE-139	Program Management in ECE	1
ECE-142	Media, Technology and the Influences on Child Development	1
ECE-143	Kindergarten Readiness	1
ECE-144	Working with the Gifted Young Child	1
ED-150	Creative Activities for Children	3
ED-229	Learning & Development	3
ED-235	Educational Technology	3
FYE-101	First Year Experience Level I	2
HS-154	Community Resources	3
HST-138	History of Love, Marriage and the Family in Western Civilization	4
PSY-101	Human Relations	3
PSY-205	Psychology as a Social Science	4
PSY-215	Introduction to Developmental Psychology	4
SOC-204	Introduction to Sociology	4
SPN-101	First-Year Spanish I	4
SPN-102	First-Year Spanish II	4
WR-122	English Composition	4
WS-101	Introduction to Women's Studies	4

Electronics Engineering Technology

Certificate
Associate of Applied Science Degree

PROGRAM CODE: AAS.ELECTRONENGTECH, CC.ELECTRONENGTECH

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 Engineering Technology degree include test equipment use, computer use, problem-solving, teamwork, understanding math and electronics fundamentals and writing and oral communication.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-111 College Algebra)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- Recommended: PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course - MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Electronics Engineering Technology AAS Degree

Upon successful completion of this program, students should be able to:
- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electrical and electronic systems;
- analyze electronic systems;
- install or build electronic and electromechanical systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment.

PROGRAM OUTCOMES
Electronics Engineering Technology Certificate Degree

Upon successful completion of this program, students should be able to:
- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electronic systems;
- analyze basic electronic systems;
- install or build electronic and electromechanical systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment.

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 the Industrial Technology Department, 503-594-3318.

ELECTRONICS ENGINEERING TECHNOLOGY CERTIFICATE

FIRST TERM
		CREDITS
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
SM-150	Semiconductor Processing I	2
WR-121	English Composition	4

SECOND TERM
EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
EET-257	Digital Logic II	3
IMT-120	Industrial Machinery I	3
MTH-111	College Algebra	5

THIRD TERM
EET-114	Electronic Equipment and Assembly III	1
EET-142	Electrical Fundamentals III	4
EET-254	Introduction to Microcontrollers	3
IMT-223	Instrumentation & Controls	3
SM-280	Electronics & Microelectronics/CWE	2
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3

Credits required for certificate   48

ELECTRONICS ENGINEERING TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FIRST TERM
		CREDITS
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
SM-150	Semiconductor Processing I	2
WR-121	English Composition	4

SECOND TERM
EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
EET-257	Digital Logic II	3
IMT-120	Industrial Machinery I	3
MTH-111	College Algebra	5

THIRD TERM
EET-114	Electronic Equipment and Assembly III	1
EET-142	Electrical Fundamentals III	4
EET-254	Introduction to Microcontrollers	3
IMT-223	Instrumentation & Controls	3
MTH-112	Trigonometry and Pre-Calculus	5

ELECTRONICS ENGINEERING TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM
		CREDITS
EET-127	Semiconductor Circuits I	2
EET-215	Technical Mechanics	3
EET-239	Principles of Troubleshooting II	2
MFG-107	Industrial Safety & First Aid	3
HD-209	Job Search Skills	1
— —	Electronics Engineering Technology program electives	3-5

FIFTH TERM
CDT-103 or CDT-108A or CDT-223	Computer-Aided Drafting I Introduction to SolidWorks Inventor Fundamentals	3
EET-225	Mechatronics I	2
EET-227	Semiconductor Circuits II	3
EET-233	Programmable Logic Controllers I	3
MFG-209	Programming & Automation for Manufacturing	3
— —	Electronics Engineering Technology program electives	3-5

SIXTH TERM
EET-234	Programmable Logic Controllers II	3
EET-235	Mechatronics II	2
EET-250	Linear Circuits	3
SM-280	Electronics & Microelectronics/CWE	4
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3
— —	Electronics Engineering Technology program electives	3-5

Credits required for degree   97-103

ELECTRONICS ENGINEERING TECHNOLOGY PROGRAM ELECTIVES:

Any course with a CDT, EET, MFG, MET, RET, SM, or WLD prefix not included in the Electronics Engineering Technology program.

RECOMMENDED ELECTIVES

		CREDITS
MFG-219	Robotics	3
MFG-140	Principles of Fluid Power	3
CS-140	Introduction to Operating Systems	4
CS-161	Computer Science I	4
WR-227	Technical Report Writing	4
MTH-251	Calculus I	5
PH-211	General Physics with Calculus	5
PH-212	General Physics with Calculus	5
PH-213	General Physics with Calculus	5
MFG-219	Robotics	3

PH-211, 212, 213 and MTH-251 are recommended for students who plan to transfer to Oregon Tech. Oregon Tech will also accept PH-201, 202, and 203. Students should contact Oregon Tech about transferability of these classes.

OREGON TECH TRANSFER COURSES

The CCC Industrial Technology Department, in partnership with Oregon Tech, offers a number of transferable classes into Oregon Tech's Electronics Engineering Technology degree program.

For information contact the Industrial Technology Department, 503-594-3318.

Emergency Medical Technology

Certificate

PROGRAM CODE: CC.EMT

Emergency Medical Technicians (EMTs) give immediate care to critically ill or injured people in the pre-hospital 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 licensed by the state through the Oregon Health Authority's Emergency Medical Services and Trauma Systems (OHA/EMS). National certification is available through the National Registry of Emergency Medical Technicians (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 license and national EMT certification.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply standard precautions in infection control during patient assessment and treatment;
- apply medical legal and ethical principles in the prehospital setting;
- quickly assess the scene and patients as to determine critical or non-critical;
- demonstrate basic life support patient care following standard scope of practice protocols;
- extricate and package patients for safe and expedient transport to an appropriate medical facility;
- give an effective verbal patient transfer report and document scene and patient information;
- demonstrate knowledge and skills necessary to successfully pass Oregon licensing and National 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 for an AAS-EMT (Associate of Applied Science - EMT) degree at an accredited institution.

For information contact the EMT program director at 503-594-6025 or department at *healthsciences@clackamas.edu*.

EMERGENCY MEDICAL TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
BI-231	Human Anatomy & Physiology I	4
EMT-105	Introduction to Emergency Medical Services	3
MA-110	Medical Terminology	4
MTH-065	Algebra II	4
WR-121	English Composition	4
WINTER TERM		
BI-232	Human Anatomy & Physiology II	4
CJA-203	Crisis Intervention	3
COMM-111	Public Speaking	4
EMT-101*	Emergency Medical Technician Part I	5
EMT-109	Emergency Response Communication/ Documentation	2
SPRING TERM		
BI-233	Human Anatomy & Physiology III	4
EMT-102	Emergency Medical Technician Part II	5
EMT-107	EMT Rescue	3
EMT-108	Emergency Response Patient Transportation	2
PSY-101	Human Relations	3
Credits required for certificate		*56*

*Student Petition required

Current American Heart Association Healthcare Provider level CPR) is required; criminal history background check, proof of immunization, and students will be asked to take a drug test as arranged by the department.

Employment Skills Training

Certificate

PROGRAM CODE: CC.EMPLOYSKILLS

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

The certificate 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

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 cannot be part of the EST certificate.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the knowledge developed on-the-job and in the classroom;
- complete an individualized career plan;
- demonstrate employment skills, job search skills, career management skills and/or introductory contact with an employer(s) and/or hiring manager.

CAREERS

Completion of an EST certificate can impact any career.

For information contact Student Academic Support Services Department, 503-594-3475, or *www.clackamas.edu/advising*.

First-Line Supervisor Fundamentals

Certificate

PROGRAM CODE: CC.FIRSTLINEFUND

The First-Line Supervisor Fundamentals certificate provides the skills in four categories necessary to make a living in retail or food service, human relations in business; business computing; business communication; and fundamentals of management. These skills are necessary for a first-line supervisor career.

The First-Line Supervisor Fundamentals certificate builds directly into the Retail Management certificate.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- describe basic psychological principles that help build relationships among employers and employees;
- create documents using the internet, Microsoft Word, PowerPoint and Excel;
- demonstrate critical skills for successful business communication;
- communicate theories of management.

CAREERS

Career opportunities includes entry level and first-line supervisors in retail and food services.

For more information, contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu*.

FIRST-LINE SUPERVISOR FUNDAMENTALS CERTIFICATE

Recommended sequence.

COURSE		CREDITS
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BA-214	Business Communications	
or BA-205	Business Communications with Technology	3-4
BA-285	Human Relations in Business	4
Credits		*15-16*

Fitness Technology

Certificate

PROGRAM CODE: CC.FITNESSTECH

The Fitness Technology certificate will give students the core skills and experience needed to enter the fitness industry at an entry level position. Students attain knowledge and learn skills to seek careers related to personal training, nutrition, strength and conditioning specialist as well as other careers in the fitness industry.

The course work for this program includes cooperative work experience which affords the student opportunity for hands-on-experience within the various areas of the health and fitness industry. Students may enter this program at any term.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-218 Interpersonal Communication)

- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate excellent interpersonal skills in the areas of leadership, motivation and communication;
- understand and apply advanced exercise principles related to injury prevention, conditioning, resistance training, and functional training;
- understand and apply nationally recognized standards for fitness and health and be able to communicate the benefits and precautions associated with exercise;
- understand and apply behavior modification strategies to enhance exercise and health behavior change with clients;
- demonstrate excellent leadership abilities, interpersonal communication skills, organizational and presentation skills and other necessary professional qualities demanded of health and fitness professionals in the workforce.

Fitness Technology continued…

CAREERS

Career opportunities include personal trainer, life coach, nutrition specialist, strength and conditioning specialist, athletic coach, fitness instructor and physical education instructor.

For information contact Tracy Nelson, 503-594-3274 or *tracyn@clackamas.edu.*

FITNESS TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
COMM-218	Interpersonal Communication	4
HE-202	Introduction to Fitness Technology Careers	1
PE-240	Strength & Conditioning Theory & Techniques	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Fitness Technology program elective	3

WINTER TERM		
COMM-227	Nonverbal Communication	4
HE-252	First Aid/CPR/AED	3
HPE-295	Health & Fitness for Life	3
— —	Fitness Technology program elective	4

SPRING TERM		
HE-201	Personal Training	3
HE-223	Sports Nutrition	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or higher		4-5
PE-280	Physical Education/CWE	3
— —	Fitness Technology program elective	4
Credits required for certificate		45-47

FITNESS TECHNOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
BA-123	Leadership & Motivation	3
ECE-235	Nutrition, Music & Movement in Early Childhood Education	3
GRN-182	Aging and the Body	3
HE-163	Body & Drugs I: Introduction to Abuse &Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HE-204	Nutrition & Weight Control	3
HE-207	Introduction to Plant Based Living	3
HE-249	Mental Health	3
HE-250	Personal Health	3
HE-263	Body & Drugs III: Marijuana	3
HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
PE-185	Physical Education	1
PE-260	Care and Prevention of Athletic Injuries	2
PE-270	Sport and Exercise Psychology	3
PE-294A	Philosophy of Coaching	2
PSY-101	Human Relations	3

Geographic Information Systems (GIS) Technology

Certificate

PROGRAM CODE: CC.GISTECHNOLOGY

The Geographic Information Systems (GIS) Technology Certificate program offers instruction in GIS software, geography, data analysis, cartography, remote sensing, data collection, database theory, and programming. GIS continues to emerge as a top industry supporting business, natural resource management, land-use planning, environmental science, data management, transportation, and other related fields.

The program also includes instruction in research skills, geospatial mathematics, computer programming, human relations skills, and filed competencies.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply geographic knowledge and GIS software techniques to create high quality analysis, data, applications, and maps;
- design and create geodatabases;
- automate geoprocessing tools to manipulate, generate, display, and analyze GIS data;
- analyze and interpret remotely sensed data including aerial and satellite imagery, LIDAR and GPS data;
- apply programming skills to create and customize applications and tools.

CAREERS

Career opportunities may include: GIS technician, GIS analyst, mapping technician and survey and remote sensing technician. Job opportunities to apply GIS skills exist in areas such as business, emergency management, health sciences, transportation, urban planning, unmanned aerial systems, and natural resource management.

For information contact Eric Roberts, 503-594-6037 or *eric.roberts@clackamas.edu.*

GEOGRAPHIC INFORMATION SYSTEMS (GIS) TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
GEO-100	Introduction to Physical Geography	
or GEO-130	Introduction to Environmental Geography	4
GIS-101	Principles of Geospatial Technology	2
GIS-201	Introduction to Geographic Information Systems	3
GIS-236	Introduction to Programming for GIS	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	4

SECOND TERM		
GIS-202	Intermediate Geographic Information Systems	3
GIS-237	Advanced Programming for GIS	3
GIS-240	Geospatial Database Development and Management	3
GIS-286	Remote Sensing	3
— —	Human Relations requirement (see page 82)	3

THIRD TERM		
GIS-205	Cartography and Map Making	3
GIS-232	Data Collection & Application	2
GIS-238	GIS Web Mapping and Services	2
GIS-280	GIS/CWE	3
WR-121	English Composition	4
Credits required for certificate		45

Gerontology

Certificate

PROGRAM CODE: CC.GERONTOLOGY

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 provide significant coursework towards the two-year Human Services Generalist Associate of Applied Science degree.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- HS-156 Conducting Human Service Interviews)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:
- describe the different career options available in the field of gerontology;
- apply gerontological concepts to practice settings working with older adults;
- demonstrate an understanding of current community resources available to older adults and how to access them;
- communicate effectively with co-workers and clients of all ages;
- differentiate between normal aging and disease processes associated with aging, especially chronic illness and dementia;
- provide support to older adults grieving a loss (such as loss of spouse, job, or independence) by utilizing knowledge and skills of grief and bereavement.

CAREERS

Career opportunities 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 Yvonne Smith at 503-594-3207 or *yvonnes@clackamas.edu.*

GERONTOLOGY CERTIFICATE

FALL TERM		CREDITS
GRN-179	Careers in Gerontology	1
GRN-181	Issues in Aging	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Gerontology program elective	5

WINTER TERM		
GRN-182	Aging and the Body	3
GRN-184	Aging & the Individual	3
HE-164	Body & Drugs II: Alcohol	
or HE-263	Body & Drugs III: Marijuana	
or HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or MTH-098	College Math Foundations	4

SPRING TERM		
GRN-183	Death and Dying	3
GRN-280	Gerontology/CWE	3
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	3
— —	Gerontology program elective	3
Credits required for certificate		46-47

GERONTOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
COMM-140	Introduction to Intercultural Communication	4
CS-120	Survey of Computing	4
ED-258	Multicultural Education	3
FN-110	Personal Nutrition	3
GRN-165	Life Enrichment with Older Adults	3
GRN-290	Special Topics in Gerontology	3
HE-164	Body & Drugs II: Alcohol	3
HS-100	Introduction to Human Services	3
HS-103	Ethics for Human Service Workers	2
HS-211	Infectious Diseases and Harm Reduction	1
HS-216	Group Counseling Skills	3
HS-232	Case Management	3
HS-256	Advanced Interviewing Skills with Theory	3
NUR-100	Nursing Assistant I	7
NUR-100C	Nursing Assistant I Clinical	0
NUR-101	Certified Nursing Assistant II	5
NUR-101C	Certified Nursing Assistant II Acute Care Clinical	0
PSY-219	Introduction to Abnormal Psychology	4

Other electives may be approved by the Gerontology program advisor.

Gerontology for Health Care Professionals

Career Pathway Certificate

PROGRAM CODE: CC.GERHLCAREPRO

The need for nurses to be better prepared for caring for our aging population has been highlighted by the National League for Nursing (NLN) 2012, The Hartford Center for Geriatric Nursing (1996), The Institute of Medicine (IOM) 2012, Healthy People 20-20 and myriad other nursing organizations. Currently the Oregon Consortium for Nursing Education (OCNE) requires students receive Older Adult content in NRS-110 (Foundations of Nursing - Health Promotion) and then the assumption is that as the curricula addresses the lifespan of an individual, that more gerontology content is included throughout the program. Although this may be the case, it is up to each individual college and then each individual instructor to determine when and how much gerontology content to include. This career pathway certificate will address the need for students in nursing and other allied health care programs (such as Medical Assistant, and Emergency Medical Technology) to have the background and knowledge to work with the aging population.

PROGRAM OUTCOMES

Upon the successful completion of this program, students should be able to:

- apply current theories in gerontology to their field of practice;
- apply gerontological concepts to practice settings working with older adults;
- differentiate between normal aging and disease processes associated with aging, especially chronic illness and dementia;
- provide support to older adults grieving a loss (including the death of a loved one) by utilizing knowledge and skills of grief and bereavement;
- discuss the impact of aging on patient care in the allied health fields.

For information, contact Yvonne Smith at 503-594-3207 or *yvonnes@clackamas.edu*.

GERONTOLOGY FOR HEALTH CARE PROFESSIONALS CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
GRN-181	Issues in Aging	3
GRN-182	Aging and the Body	3
GRN-183	Death and Dying	3
GRN-184	Aging & the Individual	3
— —	Gerontology for Health Care Professionals program electives	3
Credits required for certificate		*15*

GERONTOLOGY FOR HEALTH CARE PROFESSIONALS PROGRAM ELECTIVES

COURSE		CREDITS
GRN-165	Life Enrichment with Older Adults	3
GRN-290	Special Topics in Gerontology	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-154	Community Resources	3
HS-156	Conducting Human Service Interviews	3

Nursing Assistant– Gerontology Specialist

Career Pathway Certificate

PROGRAM CODE: CC.NAGERONSPEC

This program combines the nursing assistant clinical training with the applicable theory aimed at serving our aging population. This certificate will ultimately lead to an advanced workforce for employers and more robust employment opportunities for students.

PROGRAM OUTCOMES

Upon the successful completion of this program, students should be able to:

- apply gerontological concepts to practice settings working with older adults;
- differentiate between normal aging and disease processes associated with aging, especially chronic illness and dementia;
- provide support to older adults grieving a loss (including the death of a loved one) by utilizing knowledge and skills of grief and bereavement.

For information, contact Yvonne Smith at 503-594-3207 or *yvonnes@clackamas.edu*.

NURSING ASSISTANT–GERONTOLOGY SPECIALIST CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
GRN-181	Issues in Aging	3
GRN-182	Aging and the Body	3
GRN-183	Death and Dying	3
GRN-184	Aging & the Individual	3
NUR-100	Nursing Assistant I	7
NUR-100C	Nursing Assistant I Clinical	0
Credits required for certificate		*19*
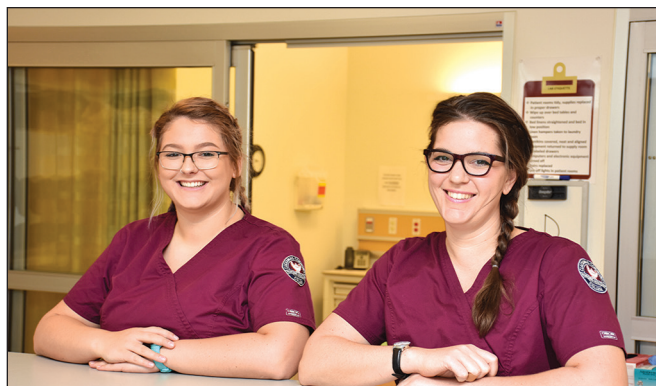
Horticulture

Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.HORT1, CC.HORT

The Horticulture Department provides quality education and training for industry and community members. Greenhouse, nursery, landscape, arboriculture, and organic farming courses integrate technical knowledge, critical thinking and environmental stewardship.

Horticulture is a hands-on, project-based curriculum with a variety of lecture-lab style classes where students practice industry related skills and experience growing and caring for plants in all seasons throughout the year. Learning activities involve students in the day-to-day operation of a wide range of power and hand tools used in the trade, including: mowers, rototillers, tractors, skid steer loader, pruning tools and greenhouse equipment. Students cultivate plants in CCC's extensive farm, ornamental gardens and greenhouse facilities. This degree sets a foundation for general horticulture, while allowing students to "choose their own adventure" with a wide selection of elective courses that meet their interests.

Students may begin this program any term, although a fall start is recommended. Degree options include a one-year certificate program or a two-year Associate of Applied Science degree program. Following the course offerings in the order listed will allow for completion in the one or two-year period.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- HOR-115 Horticulture Safety)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Horticulture AAS Degree

Upon successful completion of this program, students should be able to:

- demonstrate a broad range of skills in the production and maintenance of plants, including: safe use of tools and equipment, propagation from seeds and cuttings, landscape maintenance activities, growing in a greenhouse environment, and vegetable bed preparation;
- identify common woody plants in the landscape;
- recognize and evaluate key pests and propose solutions based on IPM strategies;
- use a basic understanding of plant biology and soil science to make sound decisions in the production and maintenance of plants;
- display effective decision making, time management and project management skills in the horticulture industry;
- communicate effectively with co-workers and customers through speaking, writing and computer technology.

PROGRAM OUTCOMES
Horticulture Certificate Degree

Upon successful completion of this program, students should be able to:

- demonstrate a broad range of skills in the production and maintenance of plants, including: safe use of tools and equipment, propagation from seeds and cuttings, landscape maintenance activities, growing in a greenhouse environment, and vegetable bed preparation;
- identify common woody plants in the landscape;
- implement IPM strategies in the horticulture industry;
- use a basic understanding of plant biology and soil science to make sound decisions in the production and maintenance of plants;
- communicate effectively with co-workers and customers through speaking, writing, and computer technology.

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, among others.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu*.

OREGON STATE UNIVERSITY 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 Horticulture advisor to obtain the most recent transfer information.

OSU TRANSFER COURSES

COURSE		CREDITS
HOR-112	Horticulture Career Exploration	2
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	4
HOR-228	Plant Identification/Spring	4
HOR-246	Organic Farming and Gardening	2

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

Horticulture continued…

HORTICULTURE CERTIFICATE

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-122	Greenhouse I	
or HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	4-5

WINTER TERM		
HOR-130	Plant Propagation Theory	
or HOR-131	Tree & Shrub Pruning	3
HOR-133	Horticulture Practicum/Winter	2
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4

SPRING TERM		
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-142	Greenhouse II	
or HOR-145	Turf Installation & Maintenance	2-3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	4

SUMMER TERM		
HOR-280	Horticulture/CWE	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

Credits required for certificate　　51-55

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	4-5

WINTER TERM		
HOR-130	Plant Propagation Theory	
or HOR-131	Tree & Shrub Pruning	3
HOR-133	Horticulture Practicum/Winter	2
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4

SPRING TERM		
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

SUMMER TERM		
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-122	Greenhouse I	
or HOR-224	Landscape Installation	3
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
SPN-101	First-Year Spanish I	4
— —	Horticulture program electives	3

WINTER TERM		
BA-101	Introduction to Business	4
BA-119	Project Management Practices	2
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation Design	3
HOR-237	Disease Identification	2
— —	Horticulture program electives	3

SPRING TERM		
HOR-142	Greenhouse II	
or HOR-145	Turf Installation & Maintenance	2-3
HOR-240	Irrigation Practices	3
— —	Horticulture program electives	8

Credits required for degree　　94-98

HORTICULTURE PROGRAM ELECTIVES

COURSE		CREDITS
BA-223	Principles of Marketing	4
HOR-113	Organic Farming Practicum/Fall	3
HOR-122	Greenhouse I	3
or HOR-224	Landscape Installation	3
HOR-123	Landscape Maintenance	3
HOR-124	Food Harvest	3
HOR-125*	Food Production in the Willamette Valley	3
HOR-126*	Landscape Water Features	1
HOR-127*	Landscape Lighting	1
HOR-128*	Landscape Stones & Pavers	1
HOR-129*	Landscape Decks & Fences	1
HOR-130	Plant Propagation Theory	3
or HOR-131	Tree & Shrub Pruning	3
HOR-135	Propagation of Edible Plants	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-141	Organic Farming Practicum/Spring	4
HOR-142	Greenhouse II	3
or HOR-145	Turf Installation & Maintenance	2
HOR-146	Fruit & Berry Growing	3
HOR-148	Farm Equipment	3
HOR-211	Native Plant Identification	1
HOR-212	Flower Arranger's Garden/Fall	2
HOR-213*	Computer-Aided Landscape Design	3
HOR-215	Herbaceous Perennials	3
HOR-220	Plant Propagation/Fall	3
HOR-225	Arboriculture I	3
HOR-229	Introduction to Landscape Design	3
HOR-232*	Commercial Floral Design	3
HOR-235	Weed Identification	2
or HOR-236	Insect Identification	2
HOR-239	Tree Climber Training	1
HOR-241*	Nursery Management	3
HOR-244*	Environmental Landscape Design	3
HOR-246	Organic Farming and Gardening	2
HOR-250	Herb Growing and Gardening	1
HOR-251	Herbal Products	1
HOR-252	Kitchen Herbs	1
HOR-260	Arboriculture II	3
HOR-261	Tree Diagnostics	2

HOR-281	Horticulture/CWE	6
or HOR-280	Horticulture/CWE	3
& HOR-282	Horticulture/CWE	3
WET-109	Backflow Assembly Operation and Testing	4

*Offered alternate years

Irrigation Technician

Career Pathway Certificate

PROGRAM CODE: CC.IRRTECHNICIAN

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 a part of the Horticulture AAS degree program.

Students in this program also take the Backflow Assembly Operation and Testing class, which prepares them to become certified as a Backflow Assembly Tester.

This pathway certificate is a part of the Horticulture AAS degree program. Classes also count toward the Landscape Management AAS.

PROGRAM OUTCOMES
Upon successful completion of this program, students should be able to:

- design, install, maintain, troubleshoot, repair and program irrigation systems.

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

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu*.

IRRIGATION TECHNICIAN CAREER PATHWAY CERTIFICATE

WINTER TERM		CREDITS
HOR-231	Irrigation Design	3
WET-109	Backflow Assembly Operation and Testing	4
SPRING TERM		
HOR-140	Soils	3
HOR-240	Irrigation Practices	3
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6
Credits required for certificate		*19*

Plant Health Management

Career Pathway Certificate

PROGRAM CODE: CC.PLANTHEALMGT

The Plant Health Management program provides instruction for monitoring and identifying pests, selecting and utilizing appropriate control measures and evaluating their effectiveness. Course work is offered mainly through evening classes and on-the-job training. This pathway certificate is a part of the Horticulture AAS degree program. Classes also count toward the Landscape Management AAS and the Arboriculture AAS programs.

PROGRAM OUTCOMES
Upon successful completion of this program, students should be able to:

- recognize and evaluate key pests in the landscape and propose solutions based on IPM strategies.

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

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu*.

PLANT HEALTH MANAGEMENT CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-216	Integrated Pest Management	3
HOR-237	Disease Identification	2
SPRING TERM		
HOR-120	Pesticide Laws & Safety	1
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6
Credits required for certificate		*16*

Human Resource Management

Certificate

PROGRAM CODE: CC.HUMANRESMNGT

This certificate is recommended for students and/or professionals currently working or intending to work in the human resource field. The Human Resource Certification serves as a pathway to employment or advancement in human resource management. This certificate also helps with the professional standards and education requirements for careers in HR.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math or MTH-065 Algebra II)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:
- describe the impacts of the major laws and Supreme Court decisions affecting Human Resource Managers;
- describe disparate treatment and adverse impact, and explain the Uniform Guidelines related to national origin, religion, and other discrimination;
- conduct job analyses;
- conduct recruitment and selection processes, and advise hiring supervisors regarding legal and ethical issues;
- implement and maintain Human Resource Management processes, including Training and Development and Performance Management, under direction of HR Manager;
- describe issues related to financial equity and direct and indirect financial compensation;
- apply reflective thinking and self-management in professional settings;
- explain legal and process considerations related to collective bargaining and Collective Bargaining Agreement management.

CAREERS

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

For information call Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*.

HUMAN RESOURCE MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	
or MTH-065	Algebra II	3-4
BA-131	Introduction to Business Computing	4
WR-121	English Composition	4
WINTER TERM		
BA-208	Employee and Labor Relations	4
BA-224	Human Resource Management	4
BA-250	Small Business Management	3
BA-285	Human Relations in Business	4
SPRING TERM		
BA-226	Business Law I	4
BA-229	Employment Law	4
BA-254	Basic Compensation & Benefits	4
— —	Human Resource Management program electives	3
Credits required for certificate		45-47

Courses in this program can be applied to satisfy requirements in the Business AAS degree.

HUMAN RESOURCE MANAGEMENT PROGRAM ELECTIVES

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

Human Resource Management Essentials

Career Pathway Certificate

PROGRAM CODE: CC.HRMESSENTIALS

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

Upon successful completion of this program, students should be able to:
- describe the impacts of major laws and Supreme Court decisions affecting Human Resource Managers,
- describe disparate treatment and adverse impact, and explain the Uniform Guidelines related to national origin, religion, and other discrimination;
- assist in conducting job analyses;
- assist in recruitment and selection processes, and advise hiring supervisors regarding legal and ethical issues;
- assist in implementing and maintaining Human Resource Management processes, including Training and Development and Performance Management;
- describe issues related to financial equity and direct and indirect financial compensation;
- apply reflective thinking and self-management in professional settings.

CAREERS

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

For information call Michael Moiso, 503-594-3770 or *mmoiso@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 & Benefits	4
BA-285	Human Relations in Business	4
Credits required for certificate		*16*

Courses in this program can be applied to satisfy requirements in the Human Resource Management certificate.

Human Services Generalist

Certificate
Associate of Applied Science Degree

**PROGRAM CODES: AAS.HUMANSERVGEN,
CC.HUMANSERVGEN**

Both the one-year certificate and the two-year AAS in Human Services Generalist degree offer training for entry-level positions in diverse social services agencies. The degree combines academic course work with 12 credits of supervised field experience. In addition to general course work in human services, students may select a variety of approved elective certificates/courses to focus on different concentration areas.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- HS-156 Conducting Human Service Interviews)
- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1 course- HE-163 Body & Drugs I: Introduction to Abuse & Addiction) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

Program Outsomes
Human Services Generalist AAS Degree

Upon successful completion of this program, students should be able to:
- complete human service assessments that include client strengths and challenges as well as the scope of conditions that promote or inhibit human functioning;

- apply knowledge about the history, development and function of individuals, families and other systems;
- practice professional communication skills both verbally and in writing in a human services setting;
- adhere to the professional ethics, attitudes and values necessary for effective human service work;
- analyze the context and the role of diversity in determining and meeting people's needs.
- demonstrate awareness of personal values, beliefs, goals, strengths and limitations;
- demonstrate a range of appropriate human service skills in a field setting.

PROGRAM OUTCOMES
Human Services Generalist Certificate Degree

Upon successful completion of this program, students should be able to:
- apply knowledge about the history, development and function of individuals, families and other systems;
- practice beginning-level professional communication skills both verbally and in writing in a human services setting;
- adhere to the professional ethics, attitudes and values necessary for effective human service work.

CAREERS

Opportunities for employment include positions such as case managers and assistants, resource specialists, family advocates, client advocates, intake workers, family assistance workers and volunteer coordinators.

For information contact Yvonne Smith, 503-594-3207 or *yvonnes@clackamas.edu*.

HUMAN SERVICES GENERALIST CERTIFICATE

FALL TERM		CREDITS
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Human Services Generalist program electives	6
WINTER TERM		
HDF-260	Understanding Child Abuse and Neglect	
or GRN-184	Aging & the Individual	3-4
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or MTH-098	College Math Foundations	4
— —	Human Services Generalist program electives	5
SPRING TERM		
HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family, & Intimate Relations	3-4
HE-164	Body & Drugs II: Alcohol	
or HE-263	Body & Drugs III: Marijuana	
or HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	3
HS-280	Human Services Generalist I: CWE/Practicum	3
Credits required for certificate		*45-48*

Human Services Generalist continued…

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

FALL TERM		CREDITS
HDF-260	Understanding Child Abuse and Neglect	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Human Services Generalist program electives	3

WINTER TERM		
HE-164	Body & Drugs II: Alcohol	
or HE-263	Body & Drugs III: Marijuana	
or HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
HS-103	Ethics for Human Service Workers	2
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or MTH-098	College math Foundations	4
— —	Human Services Generalist program electives	3

SPRING TERM		
HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family, & Intimate Relations	3-4
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	3
— —	Human Services Generalist program electives	6

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

FALL TERM		CREDITS
CJA-214	Intimate Partner Violence	
or CJA-215	Sexual Abuse and Human Trafficking	3
HS-256	Advanced Interviewing Skills with Theory	3
HS-280	Human Services Generalist I: CWE/Practicum	4
— —	Human Services Generalist program electives	4

WINTER TERM		
HS-281	Human Services Generalist II: CWE/Practicum	4
PSY-215	Introduction to Developmental Psychology	4
SOC-205	Social Stratification & Social Systems	4
— —	Human Services Generalist program electives	3

SPRING TERM		
HS-216	Group Counseling Skills	3
HS-232	Case Management	3
HS-282	Human Services Generalist III: CWE/Practicum	4
— —	Human Services Generalist program electives	5
Credits required for degree		*90-92*

HUMAN SERVICES GENERALIST PROGRAM ELECTIVES

Students take 24 credits from courses taken for completion from any of the following certificate programs: Gerontology, Gerontology for Health Care Professionals, Nursing Assistant-Gerontology Specialist, Juvenile Corrections, or Early Childhood Education & Family Studies.

Any course numbered 100 or above in the following prefixes as long as the course is not fulfilling another requirement in this degree:

ASL, CJA, COMM, ECE, ED, FR, GER, GRN, HD, HDF, HS, MA, PSY, SOC, SPN, WS or any of the following Health courses:

COURSE		CREDITS
HE-164	Body & Drugs II: Alcohol	3
HE-205	Youth Addictions	3
HE-249	Mental Health	3
HE-252	First Aid/CPR/AED	3
HE-263	Body & Drugs III: Marijuana	3
HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3

Alcohol & Drug Counselor

Career Pathway Certificate

PROGRAM CODE: CC.ALDRUGCOUNSLR

The Alcohol & Drug Counselor Pathway Certificate prepares students to sit for the certification examination offered by the Addiction Counselor Certification Board. The coursework is appropriate both for new students to the field, and those wishing to update their skills or seek additional certification. The certificate provides the 150 educational hours required by the certification board. Students can also opt to add a CWE component that will partially fulfill the 1000 required practicum hours. Qualifying for the CADC I certificate is a stepping stone for students who want to work now, but may also be thinking of pursuing further education in the future. More information about certification can be found at *www.mhacbo.org*

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate appropriate interviewing skills in an assessment or treatment setting;
- articulate the ethics required for effective work in the substance abuse field;
- recognize the signs of common substance abuse disorders;
- discuss the impact of drug use and abuse on society and the public health.

CAREERS

This program prepares students to work in a variety of human service settings, including both inpatient and outpatient treatment programs, programs for the homeless, and a variety of community agencies.

For information contact Yvonne Smith, 503-594-3207 or *yvonnes@clackamas.edu*.

ALCOHOL & DRUG COUNSELOR CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HS-103	Ethics for Human Service Workers	2
HS-104	Using Diagnostic Criteria in Addiction Treatment	1
HS-156	Conducting Human Service Interviews	3
HS-211	Infectious Diseases and Harm Reduction	1
HS-216	Group Counseling Skills	3
Credits required for certificate		*16*

Industrial Maintenance Technology

Certificate
Associate of Applied Science Degree

PROGRAM CODE: AAS.INDMAINTECH, CC.INDMAINTECH

Industrial Maintenance Technology (IMT) is a program that prepares students to succeed as maintenance technicians in industry. IMT graduates perform mechanical and electrical maintenance of manufacturing equipment such as machine tools, automated process equipment and buildings systems to keep production operational. Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to industrial electronics to robotics. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100- Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits-MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Industrial Maintenance Technology AAS Degree

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity;
- troubleshoot, install and repair complex electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools;
- use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements;
- effectively apply computer technology to the automation and control of manufacturing and building systems;
- communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

PROGRAM OUTCOMES
Industrial Maintenance Technology Certificate Degree

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity;
- troubleshoot, install and repair basic electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools;
- use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements;
- communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

CAREERS

IMT graduates find careers as maintenance mechanics, millwrights, process technicians, maintenance machinists, building engineers, robotics technicians and industrial electrician apprentices.

For information contact Mike Mattson, 503-594-3322 or *mattsonm@clackamas.edu.*

INDUSTRIAL MAINTENANCE TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
IMT-104	Reading Schematics and Symbols	2
MFG-103	Machining for Fabrication & Maintenance	3
MFG-107	Industrial Safety & First Aid	3
MFG-109	Computer Literacy for Technicians	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
WINTER TERM		
COMM-100	Basic Speech Communication	3
EET/IMT-139	Principles of Troubleshooting I	2
IMT-120	Industrial Machinery I	3
MFG-131	Basic Electricity II	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II	3
SPRING TERM		
IMT-110	Preventative Maintenance	2
MFG-132	Basic Electricity III	3
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
WR-101	Communication Skills: Occupational Writing	3
— —	Technical elective	3
Credits required for certificate		*51*

INDUSTRIAL MAINTENANCE TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

Industrial Maintenance Technology continued…

INDUSTRIAL MAINTENANCE TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
EET/IMT-239	Principles of Troubleshooting II	2
IMT-108	Rigging and Lifting	2
IMT-215	Electromechanical Systems I	2
IMT-220	Industrial Machinery II	3
WLD-150	Welding Processes	4
— —	Technical elective	3

WINTER TERM		
CDT-108A	Introduction to SolidWorks	
or CDT-103	Computer-Aided Drafting I	3
EET-233	Programmable Logic Controllers I	3
IMT-223	Instrumentation & Controls	3
IMT-225	Electromechanical Systems II	2
MFG-209	Programming & Automation for Manufacturing	3
— —	Technical elective	3

SPRING TERM		
EET-234	Programmable Logic Controllers II	3
MET-170	Introduction to Manufacturing Processes	3
MFG-219	Robotics	3
MFG-280	Manufacturing Technology/CWE	2
— —	Technical elective	3
Credits required for degree		*98*

INDUSTRIAL MAINTENANCE TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, GIS, MET, MFG, SM, or WLD prefix not included in the Industrial Maintenance Technology program or other technical course with approval.

Industrial Maintenance Technology Mechanical Maintenance

Certificate

PROGRAM CODE: CC.IMTMECHMAIN

Industrial Maintenance Technology (IMT) Mechanical Maintenance certificate is a program that prepares students to succeed as mechanical maintenance technicians in industry. Graduates perform mechanical maintenance of manufacturing equipment such as machine tools, process equipment and buildings systems to keep production operational. Mechanical Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to fluid power. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100- Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:
- work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity;
- troubleshoot, install and repair basic electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools;
- use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements;
- communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

CAREERS

IMT graduates find careers as maintenance mechanics, millwrights, process technicians, maintenance machinists, building engineers, robotics technicians and industrial electrician apprentices.

For information contact Mike Mattson, 503-594-3322 or *mattsonm@clackamas.edu*

INDUSTRIAL MAINTENANCE TECHNOLOGY MECHANICAL
MAINTENANCE CERTIFICATE: 1ST YEAR

FALL TERM		CREDITS
IMT-104	Reading Schematics and Symbols	2
IMT-108	Rigging and Lifting	2
MFG-103	Machining for Fabrication & Maintenance	3
MFG-107	Industrial Safety & First Aid	3
MFG-109	Computer Literacy for Technicians	3
MTH-050	Technical Mathematics I	4

WINTER TERM		
COMM-100	Basic Speech Communication	3
IMT-120	Industrial Machinery I	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II	3
WLD-150	Welding Processes	4

SPRING TERM		
IMT-110	Preventative Maintenance	2
MET-170	Introduction to Manufacturing Processes	3
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
WR-101	Communication Skills: Occupational Writing	3
— —	Technical Elective	3
Credits required for certificate		*49*

INDUSTRIAL MAINTENANCE TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, GIS, MET, MFG, or WLD prefix not included in the Industrial Maintenance Technology program or other technical course with approval.

Landscape Management

Associate of Applied Science Degree

PROGRAM CODE: AAS.LANDSCAPEMGMT

The Landscape Management degree prepares students for entry-level management positions in the landscaping industry by providing them business, communication and project management skills in addition to a basic understanding of, and hands-on experience with, the activities involved in the installation and maintenance of landscapes.

Sustainable practices, such as the use of Integrated Pest Management, water-efficient landscapes, and techniques that protect and care for the soil are emphasized throughout the program. Students use industry standard equipment and practices in the care of CCC's extensive landscape facilities, including an arboretum, water-efficient demonstration garden, large turf areas, and several annual, herbaceous perennial and shrub beds. CCC's landscape program is the only one in Oregon accredited by the National Association of Landscape Professionals (NALP). Students have the opportunity to compete on the team that attends NALP's National Collegiate Landscape Competition each year.

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

Following the course offerings in the order listed is not required, but will allow for completion in a two-year period.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition or BA-214 Business Communications)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- HOR-115 Horticulture Safety)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate competency in sustainable landscape maintenance and installation activities, including: safe use of tools and equipment, operation of irrigation systems, pruning and training techniques, turf maintenance, hardscape installation and reading/installing from a design plan;
- identify common woody and herbaceous plants in the landscape;
- recognize and evaluate key pests in the landscape and propose solutions based on IPM strategies;
- use a basic understanding of plant biology and soil science to make sound decisions in the design and maintenance of landscapes;
- display effective decision making, time management and project management skills in the landscape industry environment;
- effectively communicate with co-workers and customers through speaking, writing and computer technology.

CAREERS

As a graduate of our Landscape program, students are prepared to work in a supervisory or skilled landscape technician position for a landscape design/build company, irrigation specialist, estate garden, parks department, arboretum, golf course or as a self-employed designer or installation/ maintenance contractor.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu*.

OREGON STATE UNIVERSITY 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 Horticulture advisor to obtain the most recent transfer information.

OSU TRANSFER COURSES

COURSE		CREDITS
HOR-112	Horticulture Career Exploration	2
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	4
HOR-228	Plant Identification/Spring	4
HOR-246	Organic Farming and Gardening	2

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

LANDSCAPE MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	4-5

WINTER TERM		
HOR-131	Tree & Shrub Pruning	3
HOR-133	Horticulture Practicum/Winter	2
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4
HOR-229	Introduction to Landscape Design	
or HOR-244*	Environmental Landscape Design	3

Landscape Management continued…

SPRING TERM

BA-285	Human Relations in Business	
	or COMM-100 Basic Speech Communication	3-4
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	4

SUMMER TERM

HOR-281	Horticulture/CWE	
	or HOR-280 Horticulture/CWE	
	& HOR-282 Horticulture/CWE	6

LANDSCAPE MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-123	Landscape Maintenance	3
HOR-224	Landscape Installation	3
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
SPN-101	First-Year Spanish I	4
— —	Landscape Management program electives	3

WINTER TERM		
BA-119	Project Management Practices	2
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation Design	3
HOR-237	Disease Identification	2
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	
or BA-214	Business Communications	3-4

SPRING TERM		
BA-101	Introduction to Business	4
Choose two from the following:		
HOR-126*	Landscape Water Features	1
HOR-127*	Landscape Lighting	1
HOR-128*	Landscape Stones & Pavers	1
HOR-129*	Landscape Decks & Fences	1
HOR-145	Turf Installation & Maintenance	2
HOR-215	Herbaceous Perennials	3
HOR-240	Irrigation Practices	3
Credits required for degree		94-97

LANDSCAPE MANAGEMENT PROGRAM ELECTIVES

COURSE		CREDITS
BA-223	Principles of Marketing	4
HOR-126*	Landscape Water Features	1
or HOR-127*	Landscape Lighting	1
or HOR-128*	Landscape Stones & Pavers	1
or HOR-129*	Landscape Decks & Fences	1
HOR-146	Fruit & Berry Growing	3
HOR-211	Native Plant Identification	1
HOR-212	Flower Arranger's Garden/Fall	2
HOR-213*	Computer-Aided Landscape Design	3
HOR-220	Plant Propagation/Fall	3
HOR-225	Arboriculture I	3
HOR-229	Introduction to Landscape Design	3
or HOR-244*	Environmental Landscape Design	3
HOR-239	Tree Climber Training	1
HOR-246	Organic Farming and Gardening	2
HOR-260	Arboriculture II	3
HOR-261	Tree Diagnostics	2
HOR-290	Special Topics in Horticulture	3
WET-109	Backflow Assembly Operation and Testing	4

*Offered alternate years

Landscape Management, Arboriculture Option

Associate of Applied Science Degree

PROGRAM CODE: AAS.LANDMGMTARBOR

This degree prepares students for a career in arboriculture and urban forestry, providing the necessary knowledge base to pass the International Society of Arboriculture (ISA) Certified Arborist exam. Courses within this program are useful for both beginning students and working arborists trying to expand the breadth and depth of their knowledge. It provides a learning environment free of the demands of production arboriculture to practice techniques used in climbing, rigging, and operations management. We focus on safety, efficiency, and the reasoning behind industry standard planting, pruning, communication, tree health, and risk assessment. Students use common tree care equipment to manage CCC's arboretum and campus trees, gaining practical experience to enhance their knowledge.

Students are encouraged to start as a cohort in fall, as several classes in this program have pre- or co-requisites. Following the course offerings in the order listed allows for completion in a 2-year period, but isn't required. Part-time students should check with the Horticulture advisor to determine an appropriate schedule. Working arborists are encouraged to attend and can have the prerequisites waived for higher level classes, with enough on-the-job experience.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- BA-214 Business Communications or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- HE-252 First Aid/CPR/AED)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Upon successful completion of this program, students should be able to:
- demonstrate competency with the use of standard arboriculture equipment, including: climbing gear, chainsaw, chipper, hydraulic sprayer, truck and trailer;
- identify common woody and herbaceous plants in the landscape;
- recognize and identify key biotic and abiotic disorders in trees;

- perform site assessments, including: plant health inspections of key plants, hazard tree identification, and water audit interpretations;
- effectively communicate with co-workers and customers through speaking, report writing and computer technology.

CAREERS

As a student of our program, you can advance your understanding of trees, hone your arboricultural skills, and help promote the science of arboriculture. As a graduate of our Arboriculture program, you will be prepared to work as a plant care technician, climber, or arborist for a municipality, arboretum, or tree care company.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu.*

OREGON STATE UNIVERSITY TRANSFER AGREEMENT

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

ARBORICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HE-252**	First Aid/CPR/AED	3
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
HOR-236	Insect Identification	2

WINTER TERM		
HOR-131	Tree & Shrub Pruning	3
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4
HOR-230	Equipment Operation & Maintenance	2
HOR-239	Tree Climber Training	1

SPRING TERM		
BA-285	Human Relations in Business	
	or COMM-100 Basic Speech Communication	3-4
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-228	Plant Identification/Spring	4
WR-121	English Composition	
	or BA-214 Business Communications	3-4

SUMMER TERM		
HOR-211	Native Plant Identification	1
HOR-280	Horticulture/CWE (in Arboriculture field)	3

ARBORICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-123	Landscape Maintenance	3
HOR-225	Arboriculture I	3
HOR-262	Treework Practicum I	2
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II (or higher level of math)	4-5
— —	Arboriculture program electives	3

WINTER TERM		
BA-119	Project Management Practices	2
HOR-229	Introduction to Landscape Design	
	or HOR-244*Environmental Landscape Design	3
HOR-237	Disease Identification	2
HOR-260	Arboriculture II	3
— —	Arboriculture program electives	3

SPRING TERM		
HOR-215	Herbaceous Perennials	3
HOR-261	Tree Diagnostics	2
HOR-263	Plant Health Care Practicum	2
HOR-282	Horticulture/CWE (in Arboriculture field)	3
— —	Arboriculture program electives	3

SUMMER TERM		
HOR-281	Horticulture/CWE (in Arboriculture field)	6
Credits required for degree		94-97

ARBORICULTURE PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
HOR-145	Turf Installation & Maintenance	2
HOR-146	Fruit & Berry Growing	3
HOR-213*	Computer-Aided Landscape Design	3
HOR-224	Landscape Installation	3
HOR-229	Introduction to Landscape Design	
	or HOR-244*Environmental Landscape Design	3
HOR-231	Irrigation Design	3
HOR-235	Weed Identification	2
HOR-240	Irrigation Practices	3
HOR-264	Treework Practicum II (Aerial)	2
SPN-101	First-Year Spanish I	4

*Currently offered alternate years.

**Course may be waived with current CPR certification

Landscape Practices

Certificate

PROGRAM CODE: CC.LANDSCAPEPRAC

The Landscape Practices certificate prepares students to work in the landscaping industry by providing them with hands-on experience, and a basic understanding of the activities involved in the installation and maintenance of landscapes.

Sustainable practices, such as the use of Integrated Pest Management, water efficient landscapes, and techniques that protect and care for the soil are emphasized throughout the program. Students use industry standard equipment and practices in the care of CCC's extensive landscape facilities, including an arboretum, water-efficient demonstration garden, large turf areas, and several annual, herbaceous perennial and shrub beds.

CCC's landscape program is the only one in Oregon accredited by the National Association of Landscape Professionals (NALP). Students have the opportunity to compete on the team that attends NALP's National Collegiate Landscape Competition each year.

Following the course offerings in the order listed is not required, but will allow for completion in a one-year period.

Landscape Practices continued…

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate competency in sustainable landscape maintenance and installation activities, including: safe use of tools and equipment, operation of irrigation systems, pruning and training techniques, turf maintenance, hardscape installation and reading/installing from a design plan;
- identify common woody and herbaceous plants in the landscape;
- recognize key pests in the landscape and follow IPM strategies;
- use a basic understanding of soil science to make sound decisions in the maintenance of landscapes.

CAREERS

As a graduate of our Landscape Practices program, you will be prepared to work in a skilled landscape technician position for a: landscape design/build company, estate garden, parks department, tree care company, golf course or as a self-employed maintenance contractor.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu*.

OREGON STATE UNIVERSITY 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 Horticulture advisor to obtain the most recent transfer information.

LANDSCAPE PRACTICES CERTIFICATE

FALL TERM		CREDITS
HOR-115	Horticulture Safety	1
HOR-123	Landscape Maintenance	3
HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	4
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-131	Tree & Shrub Pruning	3
HOR-216	Integrated Pest Management	3
HOR-229	Introduction to Landscape Design	
or HOR-244*	Environmental Landscape Design	3
HOR-230	Equipment Operation & Maintenance	2
HOR-237	Disease Identification	2
SPRING TERM		
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-145	Turf Installation & Maintenance	2
HOR-228	Plant Identification/Spring	4
HOR-240	Irrigation Practices	3
SUMMER TERM		
HOR-280	Horticulture/CWE	3
Credits required for certificate		*44*

*Offered alternate years

Machine Tool Technology

Professional Upgrade
Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.MACHTECH, CC.MACHTECH

Course work in machine tool 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - see page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course-MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Machine Tool Technology AAS Degree

Upon successful completion of this program, students should be able to:

- set-up and operate manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- set-up and operate CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- apply computer software applications to produce manufacturing related documents, create CAD models, and generate CAM programs for machining processes;

- apply knowledge of materials, physics and mathematics to effectively machine industrial materials;
- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

PROGRAM OUTCOMES
Machine Tool Technology Certificate Degree

Upon successful completion of this program, students should be able to:

- work independently on manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- work independently on CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

CAREERS

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

SHORT TERM TRAINING

For students who need a quick-entry strategy into the workforce, 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 the Industrial Technology Department, 503-594-3318.

MACHINE TOOL 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	4
SECOND TERM		
MFG-105	Dimensional Inspection	2
MFG-109 or MFG-209	Computer Literacy for Technicians Programming & Automation for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	9
MTH-080	Technical Mathematics II	3
THIRD TERM		
MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-201	CNC I: Set-Up and Operation	4
MFG-280	Manufacturing Technology/CWE	2
WR-101*	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*50*

MACHINE TOOL TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

MACHINE TOOL TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
MFG-113	Machine Tool Fundamentals III	9
MFG-204	Computer-Aided Manufacturing I	4
— —	Machine Tool Technology program electives	3
FIFTH TERM		
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-211	Machine Tool Fundamentals IV	6
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 course 100 level or above)	3
Credits required for degree		*94*

MACHINE TOOL TECHNOLOGY PROGRAM ELECTIVES

Complete three or more credits from the following:

COURSE		CREDITS
CDT-102	Sketching & Problem Solving	3
CDT-103	Computer-Aided Drafting I	3
CDT-108A	Introduction to SolidWorks	3
CDT-223	Inventor Fundamentals	3
CDT-225	Advanced SolidWorks	3
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3
MFG-130	Basic Electricity I	3
MFG-219	Robotics	3
WLD-150	Welding Processes	4
— —	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 Student Services for the transfer requirements of the specific advanced program or school.

MANUFACTURING ENGINEERING TECHNOLOGY
OREGON TECH TRANSFER COURSES

The Industrial Technology Department, in partnership with Oregon Tech, offers a significant number of transferable classes into Oregon Tech's Manufacturing Engineering Technology degree program.

For information contact the Industrial Technology Department, 503-594-3318.

Mastercam

Certificate

PROGRAM CODE: CC.MASTERCAM

The Mastercam program is comprised of a series of three classes that prepare students to use Mastercam for 2D and 3D model building, toolpath selection and creation, and toolpath verification. Students will learn all basic 2D milling toolpaths, 3D surfacing toolpaths, and lathe with live-tooling toolpaths.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- utilize Mastercam for programming two dimensional toolpaths, advanced surface toolpaths, and lathe/mill-turn toolpaths;
- attain the skills necessary for employment as CAD/CAM CNC programmer.

CAREERS

CNC programmer.

For information contact the Industrial Technology Department, 503-594-3318.

MASTERCAM CERTIFICATE

COURSE		CREDITS
MFG-271	Mastercam Mill I	4
MFG-272	Mastercam Mill II	4
MFG-273	Mastercam, Lathe, Mill, Multi-Axis	4
Credits required for certificate		*12*

CNC Machining Technician

Career Pathway Certificate

PROGRAM CODE: CC.CNCMACHTECH

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 Machine Tool Technology certificate or two-year Machine Tool Technology AAS 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 this program, students should be able to:

- accurately interpret technical drawings to determine key inspection dimensions and specifications;
- work safely in an industrial environment around machinery, power tools and chemicals;
- operate manual machine tools to produce simple products to required specifications;
- operate CNC machine tools including: program try-out, tooling/work-piece setup and adjustment of three-axis lathes;
- apply mathematics to solve manufacturing problems in machining and inspection.

CAREERS

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

For more information, contact the Industrial Technology Department, 503-594-3318.

CNC MACHINING TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
MFG-104	Print Reading	2
MFG-107	Industrial Safety & First Aid	3
MFG-111	Machine Tool Fundamentals I	9
MFG-201	CNC I: Set-Up and Operation	4
MTH-050	Technical Mathematics I	4
— —	CNC Machining Technician program elective	2-4
Credits required for certificate		*24-26*

CNC MACHINING TECHNICIAN PROGRAM ELECTIVES

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

Marketing

Certificate

PROGRAM CODE: CC.MARKETING

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)
- Use appropriate mathematics to solve problems

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (1 course- BA-285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals

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;
- develop a business plan;

- develop a marketing plan;
- develop a promotional plan;
- launch an entrepreneurial endeavor;
- prepare and deliver effective presentations;
- demonstrate an understanding of fundamental business concepts through the integration of the functional areas of business into a comprehensive plan.

CAREERS

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

For students interested in an AAS in Business with a concentration in Marketing, include the following courses within your Business AAS electives: BA-156 Business Forecasting, BA-238 Sales, BA-239 Advertising, and BA-261 Consumer Behavior.

For information contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu*.

MARKETING CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121	English Composition	4
WINTER TERM		
BA-156	Business Forecasting	3
BA-223	Principles of Marketing	4
BA-239	Advertising	4
BA-285	Human Relations in Business	4
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-226	Business Law I	4
BA-238	Sales	4
BA-261	Consumer Behavior	4
Credits required for certificate		*46*

Courses in this program can be applied to satisfy elective requirements in the Business AAS degree.

Integrated Marketing & Promotion

Career Pathway Certificate

PROGRAM CODE: CC.INTMARKPRO

Students who successfully complete this pathway will be prepared to develop integrated marketing and promotional strategies within the current business environment. Skills developed in this pathway should enhance effectiveness of the marketing and promotional functions for small business owners and develop practical marketing and promotion skills for employees working within the marketing function.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate a conceptual understanding of the strategic organization through the integration of the functional areas of business into a comprehensive marketing plan;
- develop a marketing plan;
- develop a promotional plan;
- prepare and deliver effective presentations.

For information contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu*.

INTEGRATED MARKETING & PROMOTION CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
BA-261	Consumer Behavior	4
Credits required for certificate		*16*

Courses in this program can be applied to satisfy requirements in the Marketing certificate.

Medical Assistant

Certificate

PROGRAM CODE: CC.MEDASST

Medical assistants function as an integral member of the healthcare delivery team by performing administrative, clinical and other general functions of the ambulatory care setting. The Clackamas Community College, Medical Assistant (MA) program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) upon the recommendation of the Medical Assisting Educational Review Board, MAERB (CAAHEP), 25400 U.S. Highway 19 N. Ste. 158, Clearwater, FL 33763; telephone: 727-210-2350, online: *www.caahep.org*

PROGRAM PREREQUISITES & REQUIREMENTS

The application process to this limited entry program is a multi-phase admission process. Phase requirements are explained in detail on the program website. They include prerequisites, requirements and pertinent dates as listed in the current application: *https://www.clackamas.edu/academics/departments-programs/medical-assistant-ccs*. Information is also available at Student Advising Services located on Harmony, Oregon City and the Wilsonville campuses.

The program consists of three successive terms of full-time study with the addition of two prerequisite courses. Applicants are advised that a high level of dexterity, the ability to multitask and "think on your feet," increased physical and mental stamina, along with a high degree of "attention to detail" are required for the successful completion of the MA program. Successful students are required to complete an administrative and clinical practicum within an ambulatory care setting in the Portland metro area.

Medical Assistant continued…

PRIOR TO APPLICATION THE MA STUDENT CANDIDATE MUST:

Math competency. Coursework equivalent to MTH-065 or higher as shown on college transcripts with a grade C of better; or math placement higher than MTH-065. Placement assessment should be within the last five (5) academic years.

Placement assessments may be completed through the Harmony Campus Testing Center, 503-594-0636, or at the Oregon City campus Testing Center, 503-594-3283.

- Successfully complete MA-110, Medical Terminology and WR-121, English Composition with a letter grade of 'C' or better.
- Please note that prerequisites and/or application requirements may change from year to year. Please check the website listed above for the most accurate information

Students seeking to enter this special admit program must meet additional admission criteria including Oregon statutory mandates for all healthcare students and providers:

- Must not have been convicted of, pled guilty to or currently charged with a felony; and they must pass a Criminal History Background Check. Must also pass Urine Drug Screen to enter the program (CBHC and UDS must be repeated and passed prior to being released for third term externship)
- Provide official documentation that they will be at least 18 years of age prior to beginning their externship experience in Spring term
- Must certify high school diploma or pass the GED exam
- Must be in good standing with any organization that has granted a professional license, certification or registration
- Provide and submit all Oregon Health Authority (OHA) required documents within the specified time frame of the multiphase application process.
  - Criminal history background check
  - Urine drug/alcohol screen
  - American Heart Association
- BLS CPR certification (Basic Life Support CPR)
- Heartsaver 1st Aid certification
  - Health & Physical Form
  - OHA required vaccinations and/or titers and health screens

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-054 Medication Calculations for Medical Assistants)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition (preferred) or WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate entry level employment skills (psychomotor/affective);
- demonstrate knowledge of medical assistant concepts (cognitive);
- communicate relevant patient information concisely and accurately;
- apply infection controls (medical/surgical), safety and bloodborne pathogen principles and techniques to the practice of medical assisting;
- apply medical laws and ethical principles to the practice of medical assisting;
- calculate and administer medications: oral and parenteral;
- describe the structure, function and organization of the human body across the lifespan.

CAREERS

Career opportunities may include but are not limited to: employment in the ambulatory healthcare facilities, and outpatient surgical centers. Students should be prepared for entry-level employment as a medical assistant.

The Medical Assistant program at Clackamas Community College does not discriminate among applicants as to age, gender affiliation, sexual orientation, color, religion, or national origin.

For more information, contact *healthsciences@clackamas.edu*.

MEDICAL ASSISTANT CERTIFICATE PREREQUISITE TO ACCEPTANCE

COURSE		CREDITS
MA-110	Medical Terminology	4
WR-121	(preferred) English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4

MEDICAL ASSISTANT CERTIFICATE

FIRST TERM		CREDITS
BI-120	Introduction to Human Anatomy and Physiology	
or BI-101	General Biology; Cellular Biology	
& BI-102	General Biology; Animal Systems	
or BI-231	Human Anatomy & Physiology I	
& BI-232	Human Anatomy & Physiology II	
& BI-233	Human Anatomy & Physiology III	4
MA-112	Medical Office Practices	4
MA-145	Insurance & Health Information Management	5
PSY-101	Human Relations	3

SECOND TERM		
MA-116	Introduction to Medications	4
MA-117	Clinical Lab Procedures I	1
MA-117L	Clinical Lab Procedures I Lab	1
MA-118	Examination Room Techniques	5
MA-118L	Examination Room Techniques Lab	1
MTH-054	Medication Calculations for Medical Assistants	4

THIRD TERM (WEEKS 1-5)		
MA-115	Phlebotomy for Medical Assistants	1
MA-115L	Phlebotomy for Medical Assistants Lab	1
MA-121	Clinical Lab Procedures II	1
MA-121L	Clinical Lab Procedures II Lab	1
PSY-215	Introduction to Developmental Psychology	4
(WEEKS 6-11)		
MA-119**	Medical Assistant Practicum	9
Credits required for certificate		*49*

**To meet graduation requirements in addition to successful completion of courses, the MA student is required to:

- Participate in an unpaid, supervised externship in an ambulatory care setting.
- Perform 20 hours of public health-related community service.
- Register for the Certified Medical Assistant CMA (AAMA) certification exam.

Note: All clinical/practicum courses are Pass/No Pass. All other courses are letter graded and must be passed with a C or better. All related instruction courses may be taken prior to entering the MA program.

Core curriculum is sequential and may not be taken out of order. Core curriculum is intended to be completed over three consecutive terms in one academic year. Core curriculum may not be challenged. For information about American Association of Medical Assistants (AAMA), Certified Medical Assistant exam, direct inquiries to: *www.aama-ntl.org* or by phone 800-228-2262.

Medical Billing and Coding

Certificate

PROGRAM CODE: CC.MEDBILLCODE

Looking for a career in healthcare but don't want to give injections or draw blood? Work with physicians and help patients in the front office with the Medical Billing and Coding certificate from Clackamas Community College.

Medical Coders analyze the doctor's documentation using specific guidelines to determine the correct codes for billing the doctor's services. The insurance biller will apply healthcare laws to create and submit the claims for the doctor's work. The insurance biller will work with the insurance companies and patients to track the claims through payment of services rendered.

The work of the coder and insurance biller can produce prompt and proper payments to your doctor and lower their costs by applying current health insurance regulations and practices to healthcare billing, coding and reimbursement. After completing this program, students will be exposed to the knowledge to prepare them to sit for the national certification exams through the AAPC Certified Professional Biller (CPB) and Certified Professional Coder (CPC).

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- perform medical insurance billing, including producing claims and making changes to claims;
- apply coding and billing guidelines and laws;
- analyze insurance reimbursement forms to ensure insurance companies have paid accurately;
- post payments/adjustments to patient accounts;
- explain provider chart notes and code patient visits accurately for billing;
- communicate with providers and patients about billing and coding;
- describe healthcare laws that pertain to medical billing and coding;
- maintain confidentiality and security of patient data.

CAREERS

Upon successful completion of this program, students should be able to work confidently in medical billing and/or coding.

For information contact Cindy Garner, 503-594-0672 or *cindy.garner@clackamas.edu*.

MEDICAL BILLING AND CODING CERTIFICATE REQUISITES

The following requisites must be completed prior to the start of the first term. Curriculum requisites and requirements may change yearly. To see requisites or requirements, please review the department website.

COURSE		CREDITS
*BI-120	Introduction to Human Anatomy and Physiology	4
MA-110	Medical Terminology	4
WR-121	English Composition	4

MEDICAL BILLING AND CODING CERTIFICATE

FIRST TERM		CREDITS
MBC-115	Insurance Billing and Reimbursement I	4
MBC-120	Introduction to Medical Coding	3
MBC-135	Law and Ethics for Healthcare Professions	3
MTH-060	Algebra I	
or MTH-098	College Math Foundations	4

SECOND TERM		
BA-131	Introduction to Business Computing	4
MBC-115	Insurance Billing and Reimbursement II	3
MBC-125	ICD-10 Coding I	2
MBC-126	CPT/HCPCS Coding I	4

THIRD TERM		
COMM-218	Interpersonal Communication	4
MBC-140	Billing and Coding Exam Review	1
MBC-225	ICD-10, CPT® and HCPCS Coding II	5
Credits required for degree		37

*Additional option to meet biology requirement: Complete BI-231, BI-232, and BI-233.

Microelectronics Systems Technology

Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.MICROSYSTECH, CC.MICROSYSTECH

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-095 Algebra III)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- Recommended: PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Microelectronics Systems Technology AAS Degree

Upon successful completion of this program, students should be able to:

- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electrical and electronic systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment;
- demonstrate basic knowledge of semiconductor manufacturing and materials.

PROGRAM OUTCOMES
Microelectronics Systems Technology Certificate Degree

Upon successful completion of this program, students should be able to:

- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electrical and electronic systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment;
- demonstrate basic knowledge of semiconductor manufacturing and materials.

CAREERS

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

For information contact the Industrial Technology Department, 503-594-3318.

MICROELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
MTH-095	Algebra III	4
SM-150	Semiconductor Processing I	2

SECOND TERM		
EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
IMT-120	Industrial Machinery I	3
MFG-107	Industrial Safety & First Aid	3
SM-160	Semiconductor Processing II	2
WR-101*	Communication Skills: Occupational Writing	3

THIRD TERM		
EET-114	Electronic Equipment and Assembly III	1
EET-142	Electrical Fundamentals III	4
IMT-223	Instrumentation & Controls	3
SM-170	Semiconductor Processing III	2
SM-280	Electronics & Microelectronics/CWE	2
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3
Credits required for certificate		47

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
EET-127	Semiconductor Circuits I	2
EET-215	Technical Mechanics	3
EET-239	Principles of Troubleshooting II	2
HD-209	Job Search Skills	1
IMT-104	Reading Schematics and Symbols	2
— —	Microelectronics Systems Technology program electives	3

FIFTH TERM

EET-227	Semiconductor Circuits II	3
EET-233	Programmable Logic Controllers I	3
ESH-100	Environmental Regulations	2
MFG-140	Principles of Fluid Power	3
MFG-209	Programming & Automation for Manufacturing	3
SM-136	Photolithography	2

SIXTH TERM

CH-104	Introductory Chemistry	5
EET-250	Linear Circuits	3
SM-229	Vacuum Technology	2
SM-280	Electronics & Microelectronics/CWE	2
— —	Microelectronics Systems Technology program electives	3
Credits required for degree		*91*

MICROELECTRONICS SYSTEMS TECHNOLOGY PROGRAM ELECTIVES:

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

RECOMMENDED ELECTIVES:

MFG-219, EET-225, EET-235, CS-140, CDT-103

*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 Student Services for the transfer requirements of the specific advanced program or school.

OREGON TECH TRANSFER COURSES

The Industrial Technology Department, in cooperation with Oregon Tech, offers a number of transferable microelectronics classes into Oregon Tech's Electronics Engineering Technology degree program. For information contact the Industrial Technology Department, 503-594-3318.

Music Performance & Technology

Associate of Applied Science degree

PROGRAM CODE: AAS.MUSICPERFTECH

The Music Performance & Technology AAS (MPT) degree provides skills in three broad categories necessary to successfully make a living as a professional musician and closely-related fields: 1) musicianship and performance skills; 2) technical skills appropriate to composition, recording, digital audio and studio production; and 3) business skills necessary for an entrepreneurial career that generates income from multiple sources at any time, and different combinations of sources over time.

The MPT AAS overlaps both with more narrowly targeted programs such as CCC's one-year Music Technology certificate, and also with transfer-oriented programs such as CCC's AS Music degree for transfer to music at Portland State University.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- recognize and articulate the interrelationships of basic musical properties such as rhythm, melody, harmony, timbre, texture, and form, when listening, performing, evaluating and composing;
- demonstrate performance proficiency on their instrument of choice and at a basic level on the keyboard by:
- using technique adequate for artistic self-expression,
- performing music in at least one style appropriate for the instrument and its repertory,
- chart reading/writing,
- showing growth in artistry, technical skills, collaborative competence, and knowledge of repertory through regular ensemble experiences;
- use industry-standard recording techniques and equipment, and other types of music technology studios and equipment;
- complete recording projects that include elements of music and audio in digital format, including MIDI, sound sampling, synthesis, processing, editing, and mixing, and use software/hardware appropriate for these tasks in a professional setting;
- create basic business plans, marketing plans and financial statements appropriate for small music businesses (e.g. showing typical musician income streams in these contexts, marketing via social media and other channels).

CAREERS

Career opportunities includes musician, singer, vocalist, performing artist, arranger, songwriter/lyricist, touring artist, private studio teacher, studio assistant, promoter/band manager, director/conductor, composer, independent musician, accompanist, chamber musician, orchestrator, audio-visual technician, production assistant (media, audio, sound), studio technician.

Music Performance & Technology continued…

For students interested in owning their own business, the Music department highly recommends as preparation for, or enhancement of, an entrepreneurial career, CCC's SBM-020, Small Business Greenhouse course offered through the Small Business Development Center (SBDC) at the Harmony Community Campus. Students create business, marketing and financial plans for their own business and gain access to SBDC resources for startup businesses, including 1-on-1 financial counseling and other support. Note: SBM-020 does not qualify for financial aid.

For more information, contact Kathleen Hollingsworth, 503-594-6299 or *kathleen.hollingsworth@clackamas.edu*.

MUSIC PERFORMANCE & TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE: 1ST YEAR

FALL TERM		CREDITS
MUP-150	Contemporary Music Ensemble	1
*MUP-171-191 Individual Lessons		
or MUP-171J-191J Individual Lessons/Jazz		
or MUP-171R-191R Individual Lessons/Rock		2
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-111L	Music Notation Software I	1
MUS-131	Group Piano: Piano for Pleasure	1
MUS-148	Live Sound Engineering	3

WINTER TERM		
MUP-150	Contemporary Music Ensemble	1
*MUP-171-191 Individual Lessons		
or MUP-171J-191J Individual Lessons/Jazz		
or MUP-171R-191R Individual Lessons/Rock		2
MUS-102	Music Fundamentals	3
MUS-108	Introduction to Audio Recording II	3
MUS-112L	Music Notation Software I	1
MUS-132	Group Piano: Piano for Pleasure	1
MUS-140	Careers in Music	3
MUS-160	Songwriting I	2

SPRING TERM		
MTH-050	Technical Mathematics I	
or MTH-065 Algebra II or higher		4-5
MUP-150	Contemporary Music Ensemble	1
*MUP-171-191 Individual Lessons		
or MUP-171J-191J Individual Lessons/Jazz		
or MUP-171R-191R Individual Lessons/Rock		2
MUS-109	Introduction to Audio Recording III	3
MUS-113L	Music Notation Software I	1
MUS-133	Group Piano: Piano for Pleasure	1
MUS-161	Songwriting II	2
— —	PE/Health/Safety/First Aid requirement	1

MUSIC PERFORMANCE & TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE: 2ND YEAR

FALL TERM		CREDITS
COMM-100	Basic Speech Communication	4
MUP-150	Contemporary Music Ensemble	1
*MUP-271-291 Individual Lessons		
or MUP-271J-291J Individual Lessons/Jazz		
or MUP-271R-291R Individual Lessons/Rock		2
MUS-111	Music Theory I	3
MUS-141	Introduction to the Music Business	3
MUS-142	Introduction to Electronic Music I: MIDI	3
MUS-218	MPT Seminar I	1

WINTER TERM		
MUP-150	Contemporary Music Ensemble	1
*MUP-271-291 Individual Lessons		
or MUP-271J-291J Individual Lessons/Jazz		
or MUP-271R-291R Individual Lessons/Rock		2
MUS-112	Music Theory I	3
MUS-143	Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX	3
MUS-219	MPT Seminar II	1
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Music Business Skills elective	3-4

SPRING TERM		
MUP-150	Contemporary Music Ensemble	1
*MUP-271-291 Individual Lessons		
or MUP-271J-291J Individual Lessons/Jazz		
or MUP-271R-291R Individual Lessons/Rock		1
MUS-113	Music Theory I	3
MUS-144	Introduction to Electronic Music III: Digital Audio	3
MUS-170	Introduction to Scoring Music for Media	2
MUS-220	MPT Seminar III	1
MUS-280	Music/CWE	2
— —	Music Performance & Technology program elective	1-3
Credits required for degree		92-97

*Lessons must be in same instrument discipline, but may be in different styles.

MUSIC BUSINESS SKILLS ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-112	General Accounting II	4
BA-131	Introduction to Business Computing	4
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
BA-250	Small Business Management	3

MUSIC PERFORMANCE & TECHNOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
ART-116	Basic Design: Color Theory & Composition	4
ART-161	Photography I	3
ART-162	Photography II	3
ART-261	Photography III	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-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-112	General Accounting II	4
BA-119	Project Management Practices	2
BA-120	Project Management Fundamentals	4
BA-122	Teamwork	3
BA-124	Negotiation	3
BA-131	Introduction to Business Computing	4
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
COMM-112	Persuasive Speaking	4
CS-120	Survey of Computing	4
DMC-104	Digital Video Editing	4

DMC-106	Animation & Motion Graphics I	3
DMC-147	Music, Sound & Moviemaking	1
DMC-247	Sound for Media	3
J-134	Photojournalism	4
MUP-102	Wind Ensemble	2
MUP-104	Pep Band/Combo-Improv	1
MUP-105	Jazz Ensemble	2
MUP-122	Chamber Choir	2
MUP-125	Vocal Jazz Ensemble: Mainstream	2
MUP-141	College Orchestra	1
MUP-158	Chamber Ensemble	1
MUP-202	Wind Ensemble	2
MUP-204	Pep Band/Combo-Improv	1
MUP-205	Jazz Ensemble	2
MUP-222	Chamber Choir	2
MUP-225	Vocal Jazz Ensemble: Mainstream	2
MUP-241	College Orchestra	1
MUP-258	Chamber Ensemble	1
MUS-103	Music Fundamentals	3
MUS-111	Music Theory I	3
MUS-134	Group Voice: Anyone Can Sing	1
MUS-137	Group Guitar I: Guitar for Dummies	1
MUS-138	Group Guitar II	1
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-211	Music Theory II	3
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4
MUS-247	Sound for Media	3
PSY-101	Human Relations	3
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
TA-211	Technical Theatre Study	4
WR-240	Introduction to Creative Writing: Nonfiction	4
WR-241	Introduction to Creative Writing: Fiction	4
WR-242	Creating Writing: Poetry	4

Music Technology

Certificate

PROGRAM CODE: CC.MUSICTECH

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

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)

• Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

• Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication or COMM-126 Introduction to Gender Communication or COMM-140 Introduction to Intercultural Communication or COMM-218 Interpersonal Communication).

• Engage in ethical communication processes that accomplish goals

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

• complete recording projects illustrating competence in professional audio recording technologies and the ability to complete the production process using appropriate software/hardware;

• complete recording projects that include elements of music and audio in digital format, including MIDI, sound sampling, synthesis, processing, editing, and mixing and display confidence in the use of associated software/hardware appropriate for these tasks in a professional setting;

• produce a final recording project that demonstrates preparedness for entry into a career related to music technology, and articulate how that project relates to professional opportunities in that field;

• critically analyze and discuss multimedia works (their own or others) in the context of music history and/or theory;

• demonstrate an awareness of ethical, legal, and business considerations involved when creating recorded audio works, including basic professional skills related to documentation and rights licensing for copyright, fair use, etc.

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 more information, contact Brian Rose, 503-594-3340 or *brianr@clackamas.edu*.

MUSIC TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
MUS-107	Introduction to Audio Recording I	3
MUS-141	Introduction to the Music Business	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		
COMM-100	Basic Speech Communication	
	or COMM-126 Introduction to Gender Communication	
	or COMM-140 Introduction to Intercultural Communication	
	or COMM-218 Interpersonal Communication	3-4
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II (or higher level of math)	4-5
MUS-108	Introduction to Audio Recording II	3
MUS-140	Careers in Music	3
MUS-143	Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX	3
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4

Music Technology continued…

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
— —	Music Technology program basics	3
— —	Music Technology program electives	2
Credits required for certificate		*51-54*

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-111	Music Theory I	3
MUS-112	Music Theory I	3
MUS-113	Music Theory I	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-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	Wind Ensemble	2
MUP-104	Pep Band/Combo-Improv	1
MUP-105	Jazz Ensemble	2
MUP-122	Chamber Choir	2
MUP-125	Vocal Jazz Ensemble: Mainstream	2
MUP-141	College Orchestra	1
MUP-150	Contemporary Music Ensemble	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-106	Audio Recording at Home	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-145	Introduction to Digital Sound, Video & Animation	3
MUS-147	Music, Sound & Moviemaking	1
MUS-148	Live Sound Engineering	3
MUS-149	Advanced Pro Tools Editing Techniques	1
MUS-160	Songwriting I	2
MUS-161	Songwriting II	2
MUS-170	Introduction to Scoring Music for Media	2
MUS-171	Sound Design	2
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-247	Sound for Media	3

Nursing (RN)

Associate of Applied Science Degree

PROGRAM CODE: AAS.NURSING

The Clackamas Community College nursing program, which is approved by the Oregon State Board of Education and the Oregon State Board of Nursing, is also a partner in the Oregon Consortium for Nursing Education (OCNE). OCNE is a coalition of nurse educators and nursing programs across the state. The curriculum in OCNE nursing programs is competency-based and was developed in collaboration with Oregon Health & Science University (OHSU) and other community colleges around the state. The curriculum was created to educate nurses regarding the prevalent health needs of our population: Health Promotion, Chronic Illness Management, Care of the Acutely Ill and End of Life Care. As a part of the consortium, Clackamas Community College nursing program has joined with ten other Oregon community college programs and all campuses of the Oregon Health & Science University (OHSU) in a unique, unified approach to nursing education. In addition, OCNE schools share the same Required Preparatory courses and have comparable application processes for students. For more information on the OCNE curriculum, refer to *www.ocne.org*

Admission into the nursing program is by special application only. The application is a two-step process. Students must submit an application to the Allied Health Admissions Office by the stated deadline. Based upon a point system, qualified applicants will progress to the interview/essay portion of the application process. Acceptance to the nursing program allows for co-admission to Clackamas Community College and Oregon Health & Science University School of Nursing.

A criminal background check will be required prior to acceptance into the nursing program. An applicant who has been arrested, charged or convicted of any criminal offense will be evaluated on an individual basis. Certain convictions will automatically exclude an applicant from being accepted into the nursing program. Additional information pertaining to offenses that will deem an applicant as ineligible for the nursing program can be found at: *www.oregon.gov/OSBN/Pages/criminal-history.aspx*

A physical examination by a licensed healthcare provider, validation of up-to-date immunization, and urine drug screen are also required prior to the start of clinical rotations in the first term of the program. Maintenance of vaccinations (such as influenza) and American Heart Association Healthcare Provider BLS (CPR) is required throughout all terms of the nursing program. Technical standards related to the ability to perform safe patient care will need to be maintained while in the nursing program.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-095 or higher, except for MTH-098)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- PSY-215 Introduction to Developmental Psychology)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (0-1 credit-courses with HE, HPE, or PE prefix. Current Basic Life Support (AHA) is required throughout the nursing program and meets PE requirement)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- practice personal and professional actions that are based on a set of shared core nursing values;
- locate, evaluate, and ethically utilize information to communicate effectively;
- develop the use of reflection, self-analysis and self-care to deliver culturally appropriate nursing care;
- utilize techniques in motivational interviewing and therapeutic communication to practice relationship-centered nursing care;
- apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner;
- recognize which mathematical concepts are applicable to a scenario apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results;
- collaborate as part of a healthcare team, by demonstrating effective leadership in nursing and health care;
- utilize knowledge and analysis to make sound clinical judgments;
- practice reflects utilization and contribution to the broader health-care system;
- engage in intentional, life-long learning;
- apply analytical skills to social phenomena in order to understand human behavior.

The OCNE curriculum is designed as a four-year course of study (for a full-time student) with the first year devoted to pre-admission requirements. The second and third year of designated study will be completed 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 in the OCNE curriculum, leading to a Baccalaureate of Science degree with a focus in nursing offered by OHSU.

CAREERS

Due to an impending nursing shortage, nursing is one of the fastest growing occupations in the United States. Nurses are in demand and may choose to work in a variety of specialties and settings. Newly graduated nurses will enjoy the benefit of a profession that values life-long learning and offers many opportunities for not only educational, but also career advancement. 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. With additional education nurses may choose to work as nurse practitioners, nurse educators, nurse researchers, nurse anesthetists, as well as in other specialized roles.

NURSING APPLICATION REQUIREMENTS

Information regarding the program, the application process and pre-nursing academic advising sessions is available at *www.clackamas.edu/nursing*

Students are eligible to be considered for admission to the nursing program after completing 30 credits of the Required Preparatory courses listed below. BI-231 (Human Anatomy & Physiology I) must be completed and math competency must be demonstrated prior to submission of program application.

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

Completion of all Required Preparatory courses must be with a letter grade of C or better. Plus and minus grade 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 Required Preparatory courses.

Nursing (RN) continued…

NURSING (RN) PREPARATORY REQUIRED COURSES

COURSE		CREDITS
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	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
__ __	Arts & Letters, Social Science, or Natural Science electives	13

- The following courses or their equivalents will meet the eight credit minimum writing requirements:

  WR-121, WR-122 and either WR-222 or WR-227 when each course is three credits each

  WR-121 and WR-122 when each course is four credits

- Completion of WR-121 and WR-122 as a part of a previous bachelor's degree at a regionally accredited college or university is considered equivalent to completion of the writing series.

- Students may need to take elective credits in order to meet the 45 credit Required Preparatory courses minimum required for entry into the nursing program.

- At least 6 credits must come from Social Sciences

- See list below for approved Required Preparatory courses and elective courses

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

COMPETENCIES

- MTH-095 or higher, 4-5 credits

  MTH-095 or higher with a "C" or better.

  Note: MTH-098 does not meet the math competency

  Placement into MTH-105/111 as determined by CCC placement test dated after 6/15/13. (No credit given)

- Completed MTH-095 can be applied toward the 45 credits of Required Preparatory courses as a science course.

- MTH-095 credits will not count toward the BS degree.

Applicants should consider completing math through statistics, which will be required for entrance into the OHSU Bachelor's degree program.

NURSING (RN) ASSOCIATE OF APPLIED SCIENCE DEGREE:

FIRST TERM   CREDITS

BI-112* or	General Biology for Health Sciences Biology with genetics	4-5
NRS-110	Foundations of Nursing – Health Promotion	5
NRS-110C	Foundations of Nursing – Health Promotion Clinical	4
NRS-230	Clinical Pharmacology I	3
PE-185**	Physical Education	1

SECOND TERM

NRS-111	Foundations of Nursing in Chronic Illness I	3
NRS-111C	Foundations of Nursing in Chronic Illness I Clinical	3
NRS-231	Clinical Pharmacology II	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-233	Pathophysiological Processes II	3
__ __	Arts & Letters, Social Science or Natural Science electives, if needed	3

SUMMER TERM OPTION

BI-112* or	General Biology for Health Sciences Biology with Genetics	4-5

FOURTH TERM

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

FIFTH TERM

NRS-221	Chronic Illness II and End of Life	3
NRS-221C	Chronic Illness II and End of Life Clinical	6
__ __	Arts & Letters, Social Science or Natural Science electives, if needed	6

SIXTH TERM

NRS-224	Integrative Practicum	2
NRS-224C	Integrative Practicum Clinical	7
WR-222*** or WR-227	English Composition Technical Report Writing	4
__ __	Arts & Letters, Social Science or Natural Science electives, if needed	4

Credits required for degree   90-93

*BI-112 meets the Biology with genetics requirement and must be completed prior to start of second year of nursing program.

**Current Basic Life Support (AHA) is required throughout the nursing program and meets PE requirement

***Required only if eight credit writing requirement not previously met.

- 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.

NURSING (RN) PROGRAM ELECTIVES

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

ARTS & LETTERS

Courses used in this area must be at least three credits.
ASL, FR, GER, SPN (other world languages are accepted; languages must be 200 level)
ART, DMC, ENG, HUM, J, MUP, MUS, PHL, R, TA
COMM (courses numbered COMM-126 and above)
WR (except WR-101, 121, 122, or 227)

SOCIAL SCIENCE

Courses used in this area must be at least three credits.
ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

NATURAL SCIENCE

Courses used in this area must be at least three credits.
ASC, BI* (except BI-160, 163, BI-165C), CH (except CH-150), CS, ESR, G, GS, MTH (MTH-095 accepted), PH, Z

NURSING

NUR-160, NUR-217, NUR-218

BACCALAUREATE OF SCIENCE DEGREE WITH A FOCUS IN NURSING

After receiving the AAS degree in Nursing, 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 world language, or two terms of college-level world language credit (includes American Sign Language) or a world language proficiency examination.
- MTH-243 Statistics I

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

NRS-410	Population Health Practice
NRS-411	Epidemiology
NRS-412	Nursing Leadership in Health Care Delivery Systems
NRS-424*	Integrative Practicum I
	Capstone I or Minor course work
NRS-425	Integrative Practicum 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, Oregon Tech, EOU, or SOU.

*NRS-224 articulates to OHSU for substitution of NRS-424.

NURSING ASSISTANT OPTIONS

Being a certified nursing assistant can be a fulfilling, life-long vocation or the first step in your health care career.

NURSING ASSISTANT I (CNA 1)

Clackamas Community College Nursing Assistant course provides the student with the skills to perform basic level nursing care. Certified Nursing Assistants are defined by law as people who assist licensed nursing personnel in the provision of nursing care. Content includes: introduction to health care facilities, communication, basic body structure and function, patient needs, preventing infection, body mechanics, and much more. This course is approved by the Oregon State Board of Nursing.

Class times may vary from term to term. Clinical hours begin the sixth week of the course and are normally done at local Skilled Nursing Centers. Approximate length of the course is 11 weeks.

COURSE OFFERED–SUMMER, FALL, WINTER, SPRING TERMS

NUR-100	Nursing Assistant I	7 credits
NUR-100C	Nursing Assistant I Clinical	0 credits

Upon successful completion of this course, students may apply for the Oregon State Board of Nursing certification exam for nursing assistants (CNA 1).

The cost of the course will include pre-registration requirements such as criminal background check, American Heart Association CPR for Healthcare Professionals, immunizations and UA drug screen. Course tuition, textbooks, name badge, state exam fee, and a watch with a second hand, uniform and shoes.

READING & WRITING COMPETENCIES:

You will need to prove competency levels in reading and writing. Competency in reading and writing is measured by CCC placement test(s) or previous college coursework (unofficial transcript). Placement exam scores must be at least WR-121 to be eligible to apply or an unofficial transcript indicating WRD-098 was taken with a C or better.

You must be at least 18 years of age. High school students may apply with written authorization from their high school counselor. (Proof must be provided.)

Before you will be permitted to enroll you must attend the Nursing Assistant Mandatory Orientation. Specific details can be found in the college's Schedule of Classes and online at *https://www.clackamas.edu/academics/departments-programs/nursing-assistant-1-and-2.*

CERTIFIED NURSING ASSISTANT II (CNA 2)

This course is designed to prepare students to perform routine and acute nursing assistant tasks for clients in the following venues: hospital, long-term and skilled care facilities and the community. Instruction incorporates concepts of safety and preventing complications, communicating client responses to the nurse, and documenting/recording outcomes of client care. By Oregon State Board of Nursing regulations, the course is restricted to those who hold a current, unencumbered Oregon CNA 1 license and have their name listed on the CNA Registry. Also, you must be able to demonstrate proficiency in CNA 1 skills during lab sessions. This course meets the minimum state requirements with 36 hours of lecture, 22 hours of lecture/lab, as well as 30 hours of clinical experience.

COURSE OFFERED SUMMER, FALL, WINTER, SPRING TERMS:

NUR-101	Certified Nursing Assistant II	5 credits
NUR-101C	Certified Nursing Assistant II Acute Care Clinical	0 credits

Before you will be permitted to enroll you must attend the Nursing Assistant II Mandatory Orientation. Specific details can be found in the course schedule and online. For more information, email: *healthsciences@clackamas.edu.*

Occupational Skills Training

Certificate

PROGRAM CODE: CC.OCCSKILLSTRN

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - see page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- complete an individualized training curriculum and employment plan, describing the skills and knowledge necessary to become competitively employable;
- demonstrate the ability to contact employers beyond what would ordinarily be available through an application process;
- demonstrate an increase in 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 contact Student Academic Support Services Department, 503-594-3475, or *www.clackamas.edu/advising*.

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	4
WR-101	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*49*

Organic Farming

Certificate

PROGRAM CODE: CC.ORGANICFARM

This certificate focuses on an ecological systems approach to sustainable farming principles and practices which are suitable for small-scale market farming. Many classes have a lab component, which provides students with the opportunity to gain a practical, working knowledge of small-scale, organic farming and marketing practices. Production methods for vegetables, grain, and fruit are covered.

Students may begin this program any term, although starting in Spring term to follow the annual crop planting, harvesting and planning cycle is recommended.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech Communication)
- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply sustainable, organic methods in the planning, planting, management and harvesting of food crops;
- select and properly use farm equipment that is appropriate for a given scale and system of farming;
- implement organic IPM strategies in orchards and on small scale vegetable and berry farms;
- use a basic understanding of soil science and irrigation systems to make ecologically sound decisions in the production of food crops;
- write a business plan and identify the various regulations that impact an organic food producer;
- effectively communicate with co-workers and customers through speaking, writing and computer technology.

CAREERS

The Organic Farming certificate prepares graduates to operate their own farm or work in the community food system. Graduates will be qualified to run small-scale farms, work closely with existing farmers, and be advocates of local food systems. Other career opportunities include working and managing community gardens, farmers markets, and school gardens.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or *april.chastain@clackamas.edu*.

ORGANIC FARMING CERTIFICATE

FALL TERM		CREDITS
HOR-113	Organic Farming Practicum/Fall	3
HOR-124	Food Harvest	3
HOR-223	Applied Plant Science	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Organic Farming program electives	2

WINTER TERM		
HOR-135	Propagation of Edible Plants	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-216	Integrated Pest Management	3
HOR-237	Disease Identification	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	4-5

SPRING TERM		
HOR-140	Soils	3
HOR-141	Organic Farming Practicum/Spring	4
HOR-148	Farm Equipment	3
— —	Organic Farming program electives	4

SUMMER TERM		
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-146	Fruit & Berry Growing	3
HOR-284	Organic Farming - Campus Farm/CWE	3
HOR-285	Organic Farming/CWE	3

Credits required for certificate   56-59

ORGANIC FARMING PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
BA-223	Principles of Marketing	4
HOR-231	Irrigation Design	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
HOR-240	Irrigation Practices	3
HOR-246	Organic Farming and Gardening	2
HOR-250	Herb Growing and Gardening	1
HOR-251	Herbal Products	1
HOR-252	Kitchen Herbs	1

Professional Truck Driver

Certificate

PROGRAM CODE: CC.TRUCKDRIVER

The Professional Truck Driver program 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 Commercial Driver's Licensing (CDL) 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 this program, students should be able to:

- use the necessary skills to take the Commercial Driving License exam and be qualified for employment in the transportation and logistics industry;

- maintain logbooks and other written records as required by the I.C.C. and other agencies, as well as employers;

- operate vehicles of multiple configurations safely on surface streets, highways, and freeways, complying with all regulations and provide excellent customer service throughout the distinct seasonal weather challenges.

CAREERS

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

For information contact Amanda Watson, Admissions/School Director IITR Truck Schools, 503-657-8225 or *amandaw@ittr.net*

PROFESSIONAL TRUCK DRIVER CERTIFICATE:

COURSE		CREDITS
TTL-101	Introduction to Professional Truck Driving & Logistics	4
TTL-121	Practical Applications in Professional Truck Driving & Logistics	6
TTL-141	Transportation Customer Service Skills	1-3
TTL-180	Transportation & Logistics/CWE	6

Credits required for certificate   17-19

Project Management

Associate of Applied Science Degree

PROGRAM CODE: AAS.PROJECTMNGT

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 Project Management Professional (PMP) certification.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II or BA-104 Business Math)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA 285 Human Relations in Business)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit- courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

Project Management continued…

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- identify project management's five process group along with primary activities associated with each;
- successfully employ common project management tools, such as a work breakdown structure, network diagram, risk assessment, and earned value management;
- list and explain key motivational, influence, and conflict management techniques;
- employ common software tools for project management;
- analyze scenarios to determine appropriate responses to ethical dilemmas within the context of a defined scenario, plan, execute, control, and close a project;
- develop and maintain budgets to track financial and human resources;
- manage a project from initiation through closing, ensuring that stakeholder requirements have been met;
- demonstrate effective communication skills by selecting the correct medium and correct messenger to deliver compelling, persuasive, and informative communication to leadership, stakeholders, and the project team.

CAREERS

Careers include project and program management, project portfolio management, and project administration. Potential job titles include project manager, program manager, project scheduler, cost estimator, project portfolio manager, project administrator, project leader, project office manager/director, procurement planner/analyst, procurement assistant, project assistant, and project coordinator.

For more information, contact Frank Corona, 503-594-6498, or *francisco.corona@clackamas.edu*.

PROJECT MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
MTH-065	Algebra II	
or BA-104	Business Math	3-4
WR-121	English Composition	4

WINTER TERM		
BA-120	Project Management Fundamentals	4
BA-226	Business Law I	4
BT-177	Microsoft Project	3
COMM-111	Public Speaking	4

SPRING TERM		
BA-111	General Accounting I	
or BA-211	Financial Accounting I	4
BA-122	Teamwork	3
BA-124	Negotiation	3
BA-217	Budgeting for Managers	3
— —	Project Management program elective	3

PROJECT MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-125	Advanced Project Management Tools	5
BA-205	Business Communications with Technology	4
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4

WINTER TERM		
BA-123	Leadership & Motivation	3
BA-126	Project Management: Workshop	3
BA-206	Management Fundamentals	4
CS-135S	Microsoft Excel	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	1

SPRING TERM		
BA-268	Applied Project Demonstration	3
WR-227	Technical Report Writing	4
— —	Project Management program elective	7
Credits required for degree		*91-92*

PROJECT MANAGEMENT PROGRAM ELECTIVES

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

Project Management

Certificate

PROGRAM CODE: CC.PROJECTMNGT

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

Upon successful completion of this program, students should be able to:

- successfully employ common project management tools, such as a work breakdown structure, network diagram, risk assessment, and earned value management;
- demonstrate effective interpersonal communications, especially meeting and stakeholder management;
- list and explain key motivational, influence, and conflict management techniques;
- employ common software tools for project management;
- analyze scenarios to determine appropriate responses to ethical dilemmas within the context of a defined scenario, plan, execute, control, and close a project.

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 more information, contact Frank Corona, 503-594-6498, or *francisco.corona@clackamas.edu*.

PROJECT MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
WINTER TERM		
BA-123	Leadership & Motivation	3
BA-126	Project Management: Workshop	3
BT-177	Microsoft Project	3
SPRING TERM		
BA-122	Teamwork	3
BA-124	Negotiation	3
Credits required for certificate		*24*

Project Management Leadership & Communication

Career Pathway Certificate

PROGRAM CODE: CC.PMLEADERCOM

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.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate effective interpersonal communications, especially meeting and stakeholder management;
- list and explain key motivational, influence, and conflict management techniques;
- deliver persuasive and informative presentations;
- analyze scenarios to determine appropriate responses to ethical dilemmas;
- demonstrate appropriate written communication–emails, memos, and reports.

For more information, contact Frank Corona, 503-594-6498, or *francisco.corona@clackamas.edu*.

PROJECT MANAGEMENT LEADERSHIP & COMMUNICATION CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
BA-205	Business Communications with Technology	4
COMM-111	Public Speaking	4
WINTER TERM		
BA-123	Leadership & Motivation	3
BA-285	Human Relations in Business	4
SPRING TERM		
BA-122	Teamwork	3
BA-124	Negotiation	3
Credits required for certificate		*21*

Project Management Tools & Techniques

Career Pathway Certificate

PROGRAM CODE: CC.PMTOOLTECH

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.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- identify project management's five process groups along with primary activities associated with each;
- successfully employ common project management tools, such as a work breakdown structure, network diagram, risk assessment, and earned value management;
- employ common software tools for project management within the context of a defined scenario, plan, execute, control, and close a project;
- develop and maintain budgets to track financial and human resources.

For more information, contact Frank Corona, 503-594-6498, or *francisco.corona@clackamas.edu*.

PROJECT MANAGEMENT TOOLS & TECHNIQUES CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
WINTER TERM		
BA-126	Project Management: Workshop	3
BT-177	Microsoft Project	3
SPRING TERM		
BA-217	Budgeting for Managers	3
CS-135S	Microsoft Excel	3
Credits required for certificate		*21*
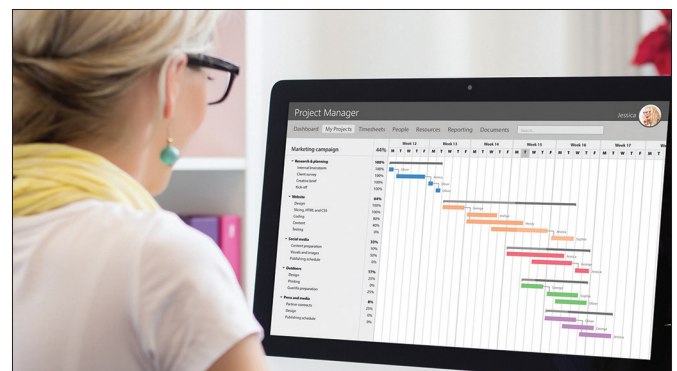
Renewable Energy Technology

Certificate
Associate of Applied Science Technology

PROGRAM CODES: AAS.RNEWNRGYTECH, CC.RNEWNRGYTECH

The Renewable Energy Technology (RET) program provides technical training for employment in the field of manufacturing, installation and maintenance of renewable energy systems and products. Graduates will be prepared to integrate, install and make repairs related to equipment and controls. This program takes a broad-based approach to training renewable energy technicians, with emphasis on mechanical and electro-mechanical systems, fluid power, instrumentation and controls as well as systems troubleshooting. RET graduates will be prepared to work in the capacity of a technician with specialized skills in energy system measurement, energy efficiency, system design and electronic controls.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - see page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Renewable Energy Technology AAS Degree

Upon successful completion of this program, students should be able to:

- communicate effectively through technical drawings to determine product and customer specifications in building systems, energy products and thermal components;
- diagnose and repair electromechanical systems;
- design, install and troubleshoot electrical and fluid power controls related to energy system integration;
- analyze potential energy sources and select appropriate technologies;
- perform a residential energy audit, recommend and implement remediation measures;
- communicate the pros and cons of renewable energy technologies to a diverse user base;
- determine the financial feasibility of a project through the mathematical analysis of thermal and electrical energy problems.

PROGRAM OUTCOMES
Renewable Energy Technology Certificate Degree

Upon successful completion of this program, students should be able to:

- communicate effectively through technical drawings to determine product and customer specifications in building systems, energy products and thermal components;
- diagnose and repair electromechanical systems;
- design, install and troubleshoot electrical and fluid power controls related to energy system integration;
- analyze potential energy sources and select appropriate technologies;
- perform a residential energy audit, recommend and implement remediation measures;
- communicate the pros and cons of renewable energy technologies to a diverse user base.

CAREERS

Career opportunities include residential/commercial energy systems integrator, energy audit and efficiency technician, energy systems installer, photo-voltaic (PV) manufacturing and industrial maintenance technician, wind turbine technician, limited renewable technician; PV, geothermal and solar thermal technicians. Additional opportunities exist in the utilities and building trades.

For information contact the Industrial Technology Department at 503-594-3318

RENEWABLE ENERGY TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-109	Computer Literacy for Technicians	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
RET-200	Renewable Energy Systems	4
RET-240	Alternative Fuels	4
SECOND TERM		
EET-139	Principles of Troubleshooting I	2
MFG-107	Industrial Safety & First Aid	3
MFG-131	Basic Electricity II	3
MTH-080	Technical Mathematics II	3
RET-209	Renewable Energy I: Energy Efficiency	3
THIRD TERM		
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3
RET-211	Renewable Energy II: System Fundamentals	3
RET-280	Renewable Energy/CWE	2
WR-101	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*49*

RENEWABLE ENERGY TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

RENEWABLE ENERGY TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM   CREDITS

Course	Title	Credits
EET-239	Principles of Troubleshooting II	2
GEO-100	Introduction to Physical Geography	
or GEO-110	Cultural & Human Geography	
or GEO-130	Introduction to Environmental Geography	
or GIS-201	Introduction to Geographic Information Systems	3-4
IMT-104	Reading Schematics and Symbols	2
IMT-215	Electromechanical Systems I	2
RET-213	Renewable Energy III: Installation & Maintenance	3
__ __	Renewable Energy Technology program elective	3

FIFTH TERM

Course	Title	Credits
IMT-223	Instrumentation & Controls	3
MFG-140	Principles of Fluid Power	3
MFG-209	Programming & Automation for Manufacturing	3
RET-215	Renewable Energy IV: Systems Design	3
__ __	Renewable Energy Technology program elective	3

SIXTH TERM

Course	Title	Credits
EET-233	Programmable Logic Controllers I	3
MFG-221	Materials Science	3
RET-217	Renewable Energy Capstone Project	3
RET-280	Renewable Energy/CWE	2
WLD-150	Welding Processes	4
__ __	Renewable Energy Technology program elective	3
Credits required for degree		*97-98*

RENEWABLE ENERGY TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, ERM, GIS, MET, MFG, RET, SM or WLD prefix not included in the Renewable Energy Technology program.

Energy Systems Maintenance Technician

Career Pathway Certificate

PROGRAM CODE: CC.ENSYSMAINTECH

The Energy Systems Maintenance Technician certificate provides students with the basic technical skills and principles to support manufacturing, installation and maintenance, and electronics and communication engineers related to renewable energy.

PROGRAM OUTCOMES
Upon successful completion of this program, students should be able to:

- communicate effectively through technical drawings to determine product and customer specifications in building systems, energy products and thermal components;
- diagnose and repair electromechanical systems;
- design, install and troubleshoot electrical and fluid power controls related to energy system integration;
- analyze potential energy sources and select appropriate technologies;
- perform a residential energy audit, recommend and implement remediation measures;
- communicate the pros and cons of renewable energy technologies to a diverse user base.

CAREERS
Career opportunities include employment in the field of manufacturing, installation and maintenance of renewable energy production.

For information contact the Industrial Technology Department at 503-594-3318.

ENERGY SYSTEMS MAINTENANCE TECHNICIAN
CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
EET-139	Principles of Troubleshooting I	2
MFG-104	Print Reading	2
MFG-107	Industrial Safety & First Aid	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
RET-200	Renewable Energy Systems	4
__ __	Energy Systems Maintenance Technician program electives	6-8
Credits required for certificate		*24-26*

ENERGY SYSTEMS MAINTENANCE TECHNICIAN
PROGRAM ELECTIVES

Select 6-8 elective credits from the following:

COURSE		CREDITS
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3
RET-209	Renewable Energy I: Energy Efficiency	3
WLD-150	Welding Processes	4
or WLD-102	Introduction to Welding	2

Retail Management

Certificate

PROGRAM CODE: CC.RETAILMGTL1Y

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 program, students should be able to:

- identify effective human relations and leadership strategies;
- communicate effectively using written documents, spreadsheets, and slide presentations;
- demonstrate an understanding of marketing concepts;
- analyze and evaluate the legal, procedural and ethical impacts of personnel management decisions;
- interpret and analyze financial information to make budget forecasts and analyses;
- evaluate retail management strategies to make sound decisions.

Retail Management continued…

CAREERS

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

For information contact Beverly Forney, 503-594-3115 or *beverlyf@clackamas.edu*.

RETAIL MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
WINTER TERM		
BA-214	Business Communications	
or BA-205	Business Communications with Technology	3-4
BA-224	Human Resource Management	4
BA-285	Human Relations in Business	4
SPRING TERM		
BA-217	Budgeting for Managers	3
BA-249	Retailing	3
Credits required for certificate		*29-30*

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

Most courses in this program can be applied to partially satisfy elective requirements in the Business Management certificate.

Water & Environmental Technology

Professional Upgrade Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.WATERENVIRONTECH, CC.WATERENVIRONTECH

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 in training certification exams.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-082A-E)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- Recommended: PSY-101 Human Relations)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course-HE-252 First Aid/CPR/AED) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Water & Environmental Technology AAS Degree

Upon successful completion of this program, students should be able to perform the following AAS program outcomes in addition to the one-year certificate outcomes:

- be more marketable through a second career related work experience;
- attain higher grade certification which will lead to higher wages;
- be certified and licensed as a State of Oregon approved Backflow Assembly Tester;
- develop a thorough understanding of the principles of hydraulics as applied to the water and wastewater industry;
- obtain increased knowledge of bacterial processes used in water and wastewater systems;
- obtain hands-on experience with instrumentation and control systems used in water and wastewater plant operations.

PROGRAM OUTCOMES
Water & Environmental Technology Certificate Degree

Upon successful completion of this program, students should be able to:

- successfully pass the state required level-1 certificate/ licensure exams for Oregon water treatment and water distribution (note: these exams can only be taken after completion of the WET-AAS degree); pass the Oregon Operator in Training certificate wastewater treatment and collection systems examinations;
- maintain and operate water and waste water treatment facilities and collection and water distribution systems;
- utilize mathematical skills to solve certification exam problems as well as situations experienced at water and waste water facilities;
- conduct and document scientific laboratory experiments as applied to the water and waste water industry and effectively communicate determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication;
- communicate the importance of safety in operator daily activities and be good stewards of ethical and professionally work place interactions.

CAREERS

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

For information contact Matthew LaForce 503-594-3148 or *laforce@clackamas.edu.*

WATER & ENVIRONMENTAL TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
MTH-082A	Wastewater Math I	1
MTH-082B	Waterworks Math I	1
WET-110	Wastewater Operations I	3
WET-111	Waterworks Operations I	3
WET-112	Computer Applications for Water and Wastewater Operations	4
WR-101 or WR-121	Communication Skills: Occupational Writing English Composition	3-4
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3

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

SPRING TERM		
WET-109	Backflow Assembly Operation and Testing	4
WET-130	Wastewater Operations III	4
WET-131	Water Treatment	4
WET-132	Collection & Distribution Lab	1
WET-134	Environmental Chemistry II	3
WET-180	Water & Environmental Projects I	5
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

FALL TERM		CREDITS
GIS-201	Introduction to Geographic Information Systems	3
WET-125	High Purity Water Production I	3
WET-241	Aquatic Microbiology	4
WET-242	Hydraulics for Water & Wastewater	3
WET-245	Instrumentation & Control	4
WET-280	Water & Environmental Projects II	5

WINTER TERM		
HE-252	First Aid/CPR/AED (Course may be waived with current CPR certification)	3
MTH-082E	Math for High Purity Water	1
WET-108	Cross-Connection Control Program Specialist	3
WET-135	High Purity Water Production II	4
Credits required for degree		90-91

PROFESSIONAL UPGRADE COURSES

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

COURSE		CEU/CREDITS
WET-010	Wastewater Operations I	3 credits
WET-011	Waterworks Operations I	3 credits
WET-020	Wastewater Operations II	3 credits
WET-021	Waterworks Operations II	3 credits
WET-030	Wastewater Operations III	3 credits
WET-031	Water Treatment	3 credits
XWET-C001	1-Day Cross Connection Specialist Update	(0.6 CEU)
XWET-C002	1-Day Tester Renewal	(0.6 CEU)
XWET-C003	2-Day Tester Retrain/Renewal	(1.2 CEU)
XWET-C004	4-Day Cross Connection Specialist Course	(3.2 CEU)
XWET-C005	5-Day Backflow Tester Course	(4.0 CEU)
XWET-C007	Water Environment School	(2.3 CEU)
XWET-C008	Waterworks School	(2.0 CEU)
XWET-C009	Water Certification Review	(1.6 CEU)

High Purity Water

Certificate

PROGRAM CODE: CC.HIPURITYWATER

The High Purity Water 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 WET-125 and WET-135 may be offered biannually.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- correctly operate and maintain SCADA equipment and other instrumentation involved in the general operation of facilities where high purity water is produced;
- perform calculations related to electrical circuit operation and hydraulics;
- correctly use reverse osmosis-based equipment to manufacture high purity water.

CAREERS

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

For information contact Matthew LaForce, 503-594-3148 or *laforce@clackamas.edu*

HIGH PURITY WATER CERTIFICATE

FALL TERM		CREDITS
MTH-082E	Math for High Purity Water	1
WET-125	High Purity Water Production I	3
WET-245	Instrumentation & Control	4

WINTER TERM		
WET-135	High Purity Water Production II	4

SPRING TERM		
WET-180	Water & Environmental Projects I	5
Credits required for certificate		17

Web Design & Development

Associate of Applied Science Degree

PROGRAM CODE: AAS.WEBDESIGNDEV

The Web Design & Development 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, digital media and animation, and technical writing. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completing course work for CS-120 Survey of Computing or placement in CS-121 Computer Applications, WRD-098 Introductory Reading & Writing 2: College Preparation or placement in WR-121 English Composition, and MTH-060 Algebra I or placement in MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate all the program learning outcomes of the Web Design Certificate;
- create sophisticated custom logos, graphics, and animations for a wide variety of client applications;
- describe the significance of relational databases to web development and apply these database concepts along with server-side scripting technologies towards the creation of data-driven web applications;
- interview and communicate with clients to create web applications that match client vision, personality, and needs;
- describe and complete the steps to begin a consulting business, including initial market research, marketing plans, and budgeting;
- exhibit good teamwork skills and serve as effective members of project teams.

CAREERS

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

OREGON TECH TRANSFER COURSES

The Business Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Debra Carino, 503-594-3170 or *dcarino@clackamas.edu*.

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

FALL TERM		CREDITS
ART-225	Computer Graphics I	3
CS-125H	HTML & Web Site Design	3
CS-140	Introduction to Operating Systems	4
CS-160	Computer Science Orientation	4
WINTER TERM		
CS-133S	Introduction to JavaScript & Server-Side Scripting	3
CS-151	Networking I	
or CS-275	Database Design	3-4
CS-181	CMS Web Development	3
CS-195	Flash Web Development	3
SPRING TERM		
CS-135I	Advanced Web Design with Dreamweaver	3
CS-234J	jQuery Web Development	3
CS-234P	PHP/MySQL Web Development	3
CS-240L	Linux Administration I	4
SUMMER TERM		
CS-280	Computer Science/CWE	3
MTH-065	Algebra II or higher level of math	4-5
WR-121	English Composition	4
— —	Human Relations requirement (see page 82)	3-4

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

FALL TERM		CREDITS
ART-226	Computer Graphics II	3
CS-135DB	Microsoft Access	3
CS-280	Computer Science/CWE	3
WR-122	English Composition	4
WINTER TERM		
CS-151	Networking I	
or CS-275	Database Design	3-4
CS-240W	Windows Desktop Administration	3
CS-280	Computer Science/CWE	3
WR-227	Technical Report Writing	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
SPRING TERM		
ART-227	Computer Graphics III	3
BA-103	Business Strategies for Computer Consultants	3
CS-289	Web Server Administration	4
CS-297W	Website Capstone	3
DMC-221	Introduction to 2D Animation: Design & Techniques	3
Credits required for degree		*97-99*

Web Design

Certificate

PROGRAM CODE: CC.WEBDESIGN2

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 real-world experience that supplements the academic classroom environment.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II or higher)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

PROGRAM REQUIREMENTS

The Web Design program prepares students for technical positions related to web and graphic design. This multidisciplinary program incorporates classes from computer science, English, 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 real-world employment that supplements the academic classroom environment.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply knowledge of current graphic design software to capture or create images for use in client websites;
- use HTML, CSS, JavaScript, and current web editing technologies, to create standards-complaint, professional websites;
- leverage existing component tools to create e-commerce applications that solve real-world problems,
- perform client needs analyses to create web applications that solve real-world problems;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication;
- communicate the importance of professional and ethical responsibilities and be aware of codes of conduct and other sources of guidance for professionally ethical decision making.

CAREERS

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

For information contact Debra Carino, 503-594-3170 or *dcarino@clackamas.edu*.

WEB DESIGN CERTIFICATE

FALL TERM		CREDITS
ART-225	Computer Graphics I	3
CS-125H	HTML & Web Site Design	3
CS-140	Introduction to Operating Systems	4
CS-160	Computer Science Orientation	4
WINTER TERM		
CS-133S	Introduction to JavaScript & Server-Side Scripting	3
CS-151	Networking I	
or CS-275	Database Design	3-4
CS-181	CMS Web Development	3
CS-195	Flash Web Development	3
SPRING TERM		
ART-226	Computer Graphics II	
or CS-240L	Linux Administration I	3-4
CS-135I	Advanced Web Design with Dreamweaver	3
CS-234J	jQuery Web Development	3
CS-234P	PHP/MySQL Web Development	3
SUMMER TERM		
CS-280	Computer Science/CWE	3
MTH-065	Algebra II or higher level math	4-5
WR-121	English Composition	4
— —	Human Relations requirement (see page 82)	3-4
Credits required for certificate		*52-56*

Welding Technology

Professional Upgrade Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.WELDINGTECH, CC.WELDINGTECH

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. The program's curriculum is based on the AWS national standard for entry level welders.

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;

Welding Technology continued…

- 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)
- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- see page 82 for course list)
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 course- MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE
- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES
Welding Technology AAS Degree

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals;
- set-up, operate, and make adjustments to welding equipment as necessary to demonstrate quality workmanship that meets current American Welding Society (AWS) and industry standards;
- demonstrate the ability to set up and operate oxy-fuel cutting equipment, carbon arc cutting and gouging and plasma cutting equipment safely and skillfully;
- apply basic knowledge of blueprint reading to fabricate projects as assigned;
- complete welding projects such as fillet welds and groove welds in all positions with Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW) that will meet visual inspection criteria based on AWS codes and industry standards;
- perform advanced welding on materials such as stainless steel and aluminum with all welding processes;
- pass AWS D 1.1/D 1.1M structural steel welding certification tests;
- recognize and be able to repair common welding defects according to AWS and industry standards.

PROGRAM OUTCOMES
Welding Technology Certificate Degree

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals;
- set-up, operate, and make adjustments to welding equipment as necessary to demonstrate quality workmanship that meets current American Welding Society (AWS) and industry standards;
- demonstrate the ability to set up and operate oxy fuel cutting equipment, carbon arc cutting and gouging and plasma cutting equipment safely and skillfully;
- apply basic knowledge of blueprint reading to fabricate projects as assigned;
- complete welding projects such as fillet welds and groove welds in all positions with Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW) that will meet visual inspection criteria based on AWS codes and industry standards;
- perform advanced welding on materials such as stainless steel and aluminum with Gas Tungsten Arc Welding (GTAW);
- recognize and be able to repair common welding defects according to AWS and industry standards.

CAREERS

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

SHORT-TERM TRAINING

For students who need a quick-entry strategy into the workforce, 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.

OREGON TECH TRANSFER COURSES

The Welding and Automotive Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047

WELDING TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-107	Industrial Safety & First Aid	3
MTH-050*	Technical Mathematics I	4
WLD-100	Welder's Print Reading I	3
WLD-111	Shielded Metal Arc Welding (Stick)	
or WLD-111A		
and WLD-111B Shielded Metal Arc Welding (Stick)		8

SECOND TERM		
MFG-103	Machining for Fabrication & Maintenance	3
MFG-109	Computer Literacy for Technicians	3
WLD-113	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	
or WLD-113A		
and WLD-113B Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)		8
WR-101*	Communication Skills: Occupational Writing	3

THIRD TERM		
WLD-110	Welder Certification	4
WLD-115	Gas Tungsten Arc Welding (GTAW)	
or WLD-115A		
and WLD-115B Gas Tungsten Arc Welding (GTAW)		8
WLD-280	Welding Technology/CWE	2
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*52*

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-221	Materials Science	3
WLD-211	Advanced Shielded Metal Arc Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
— —*	General electives (any college level course)	3
— —	Welding Technology program elective	3

FIFTH TERM		
WLD-200	Welder's Print Reading II	3
WLD-210	Pipe Welding	4
WLD-213	Advanced Gas Metal Arc Welding/Flux Core Arc Welding	4
WLD-251	Welding Fabrication II Intermediate Project	4

SIXTH TERM		
WLD-215	Advanced Gas Tungsten Arc Welding	4
WLD-252	Welding Fabrication III Advanced Project	4
WLD-280	Welding Technology/CWE	2
— —	Welding Technology program elective	4
Credits required for degree		*98*

*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 Student Services for the transfer requirements of the specific advanced program or school.

WELDING TECHNOLOGY PROGRAM ELECTIVES

Any course with a WLD or MFG prefix not included in the Welding Technology program, or other technical course with approval.

Entry Level Welding Technician

Career Pathway Certificate

PROGRAM CODE: CC.ENTRYWLDTECH

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

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals;
- set up, operate, and make adjustments to welding equipment as necessary to demonstrate quality workmanship that meets current American Welding Society (AWS) and industry standards;
- apply basic knowledge of blueprint reading to fabricate projects as assigned.

CAREERS

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

For information contact Dustin Bates, 503-594-3973, *dustinb@clackamas.edu*, or the Automotive and Welding Department, 503-594-3047

ENTRY LEVEL WELDING TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
MFG-107	Industrial Safety & First Aid	3
WLD-100	Welder's Print Reading I	3
WLD-250	Welding Fabrication I Beginning Project	4
— —	Entry Level Welding Technician program electives	11-12
Credits required for certificate		*21-22*

ENTRY LEVEL WELDING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-103	Machining for Fabrication & Maintenance	3
WLD-110	Welder Certification	1 or 4
WLD-111	Shielded Metal Arc Welding (Stick)	4 or 8
WLD-113	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	4 or 8
WLD-115	Gas Tungsten Arc Welding (GTAW)	4 or 8

Wildland Fire Science

Certificate

PROGRAM CODE: CC.FSWILDLAND

The Wildland Fire Science 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), the Oregon Department of Forestry, and National Forest Service. 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Math I or MTH-065 Algebra II)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for list)

- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the basic knowledge of wildland fire behavior;
- recognize situations where safety may be at risk and take appropriate actions to insure personal safety;
- apply the fundamental skills necessary to work as a wildland firefighter at the Firefighter 2 level, working as a member of a hand crew or engine crew;
- demonstrate an understanding of basic forest management.

CAREERS

The certificate 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 Jeff Ennenga, 503-594-3539 or *jeff.ennenga@clackamas.edu* or visit *www.clackamas.edu/ fire-science*

WILDLAND FIRE SCIENCE CERTIFICATE

FIRST TERM		CREDITS
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/L-180)	2
FRP-243	Wilderness I: Psychology of Survival	3
GIS-101	Principles of Geospatial Technology	2
WR-121	English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4

SECOND TERM		
FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-245	Wilderness III: Weather of the Northwest	2
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	4
__ __	Wildland Fire Science program electives	2-3

THIRD TERM		
BI-103	General Biology; Plants & the Ecosystem	4
BI-103L	General Biology; Plants & The Ecosystem Lab	0
FRP-110	Basic Wildland Fire Investigation (FI-110)	1
FRP-131	Advanced Firefighter Training (S-131/S-133)	1
FRP-205	Forest Management Assessments and Inventories	3
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1
__ __	Human Relations requirement (see page 82)	3-4
Credits required for certificate		45-48

WILDLAND FIRE SCIENCE PROGRAM ELECTIVES

Any EMT, FRP, GEO, GIS, or UAS course not included in the Wildland Fire Science program.

Wilderness Survival & Leadership

Career Pathway Certificate

PROGRAM CODE: CC.WILDSURVIVAL

The Wilderness Survival & 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 Science certificate.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate appropriate search and rescue methods including evacuation techniques,
- demonstrate first aid and CPR skills used in the field,
- discuss the basics of land navigation and Northwest weather prediction,
- articulate the knowledge areas required for an understanding of wilderness preparedness.

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 program in a wide variety of settings that require leadership and competency in the outback regions of the Northwest.

For information contact Jeff Ennenga, 503-594-3539 or *jeff.ennenga@clackamas.edu*, or visit *www.clackamas.edu/fire-science*.

WILDERNESS SURVIVAL AND LEADERSHIP CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
FRP-243	Wilderness I: Psychology of Survival	3
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-245	Wilderness III: Weather of the Northwest	2
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
FRP-248	Wilderness V: Introduction to Search and Rescue	2
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
Credits required for degree		15

Note: Courses do not need to be taken in sequence

Wildland Fire Forestry

Career Pathway Certificate

PROGRAM CODE: CC.FIREFOREST

The Wildland Fire Forestry program provides training in forestry and conservation skills needed for technicians in this field of work. Intended for students who would like to pursue a variety of careers in the outdoors. Students are introduced to the functions, basic tools and processes to manage forestland in Oregon.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- summarize use of Silviculture and regeneration practices;
- demonstrate how to identify trees and shrubs commonly found in Oregon;
- discuss the basics of forest road development;
- demonstrate the basics of forest measurement tools;
- explain the basics of marketing timber;
- identify logging systems;
- cite Oregon forest harvest laws.

For information contact Jeff Ennenga, 503-594-3539 or *jeff.ennenga@clackamas.edu* or visit *www.clackamas.edu/fire-science*.

WILDLAND FIRE FORESTRY CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BI-103	General Biology; Plants & The Ecosystem	4
BI-103L	General Biology; Plants & The Ecosystem Lab	0
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-201	Advanced Forest Management	3
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
GIS-101	Principles of Geospatial Technology	2
Credits required for certificate		18

Wildland FireFighter 1

Career Pathway Certificate

PROGRAM CODE: CC.FIREFIGHT1

This program will provide students the opportunity to gain the skills necessary to prepare them for entry-level jobs in the wildland firefighting industry. The courses will be offered over three terms so students will be ready for employment late spring.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the ability to function as a Wildland Firefighter at the Firefighter 2 level;
- recognize situations and take corrective actions when personal safety may be at risk;
- apply the basic skills to operate portable pumps, read and understand fire maps, compass and GPS.

For information contact Jeff Ennenga, 503-594-3539 or *jeff.ennenga@clackamas.edu* or visit *www.clackamas.edu/fire-science*.

WILDLAND FIREFIGHTER 1 CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/L-180)	2
FRP-131	Advanced Firefighter Training (S-131/S-133)	1
FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1
Credits required for certificate		14

Wildland Fire Management

Associate of Applied Science

PROGRAM CODE: AAS.WLDLNDMGMT

The Wildland Fire Science program provides education and training that can lead to seasonal employment in wildland firefighting or to the first step to a career in fire management, 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 emergencies.

Clackamas Community College is a certified training site recognized by the Pacific Northwest Wildfire Coordinating Group (PNWCG), the Oregon Department of Forestry, and federal fire management agencies. 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I or MTH-065 Algebra II)

- Use appropriate mathematics to solve problems.

Communication (1 course – WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 courses - FRP-246 Wilderness IV: Backcountry CPR/First Aid/AED)

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- evaluate hazards in the wilderness, forest and fire environments;
- design a plan appropriate to the fire or incident situation;
- execute the plan based on the appropriate strategy, tactics and incident objectives;
- effectively communicate with pertinent individuals to accomplish the mission and/or incident objectives;
- successfully lead, supervise and direct incident personnel at the appropriate level of organization.

CAREERS

Wildland fire fighter, Hot Shots, firefighting managers or supervisors, prevention workers, forest fire inspectors, forest worker.

For information contact Jeff Ennenga, 503-594-3539 or *jeff.ennenga@clackamas.edu*.

WILDLAND FIRE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/L-180)	2
FRP-243	Wilderness I: Psychology of Survival	3
GIS-101	Principles of Geospatial Technology	2
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Wildland Fire Management program electives	1

WINTER TERM		
FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-245	Wilderness III: Weather of the Northwest	2
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	4
— —	Wildland Fire Management program electives	2-3

SPRING TERM		
BI-103	General Biology; Plants & the Ecosystem	4
BI-103L	General Biology; Plants & The Ecosystem Lab	0
FRP-110	Basic Wildland Fire Investigation (FI-110)	1
FRP-131	Advanced Firefighter Training (S-131/S-133)	1
FRP-205	Forest Management Assessments and Inventories	3
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1
— —	Human Relations requirements (see page 82)	3-4

WILDLAND FIRE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
FRP-200	Basic Incident Command System (I-100, I-200, IS-700, IS-800)	4
FRP-275	Wildland Fire Management 1	4
GIS-201	Geographic Information Systems	3
— —	Wildland Fire Management program electives	4

WINTER TERM		
FRP-215	Fire Operations in the Urban Interface (S-215)	2
FRP-220	Initial Attack Incident Commander (S-200)	1
FRP-265	Wildland Fire Prevention Education 1 (P-101)	3
FRP-290	Intermediate Wildland Fire Behavior (S-290)	3
— —	GIS Electives	3
— —	Wildland Fire Management Program Electives	3

SPRING TERM		
FRP-212	Wildfire Power Saws (S-212)	2
FRP-230	Crew Boss (Single Resource) (S-230)	2
FRP-231	Engine Boss (Single Resource) (S-231)	1
— —	GIS Electives	2-3
— —	Wildland Fire Management Program Electives	7
Credits required for degree		*90-93*

WILDLAND FIRE MANAGEMENT PROGRAM ELECTIVES

Any EMT, FRP, GEO, GIS, or UAS course not included in the Wildland Fire Management program.