

Admission Information Cooperative Education Division office, Bldg. 19, Room 231, (541) 463-5203

Cooperative Education (Co-op) Co-op provides students with on-the-job learning opportunities in a business, industry, government or community organization. Students will connect theory and practice, develop skills and network with professionals and employers while earning credit toward a certificate of completion. A student may take a maximum of 11 Co-op credits as part of this program in combination with other academic classes. Contact Chuck Fike, Employment Skills Co-op Coordinator, Bldg. 19, Rm. 231C, (541) 463-5078.

Program Counselor Debra Ganser (541) 463-5034

Courses Required Each student's educational plan is individually designed to enhance existing knowledge, skills and abilities.

Energy Management Technician

Offered by the Science Division

Two-Year Associate of Applied Science Degree

Two-Year Associate of Applied Science Option, Renewable Energy Technician

Purpose To prepare students for careers in the Energy Management field, and optionally as Renewable Energy Systems Installers.

Learning Outcomes The graduate will:

- evaluate the energy use patterns for residential and commercial buildings and recommend energy efficiency and alternative energy solutions for high-energy consuming buildings.
- understand the interaction between energy consuming building systems and make recommendations based on that understanding.
- construct energy evaluation technical reports and make presentations for potential project implementation.
- use appropriate library and information resources to research professional issues and support lifelong learning.
- access library, computing and communications services, and obtain information and data from regional, national and international networks.
- collect and display data as lists, tables and plots using appropriate technology (e.g., graphing calculators, computer software).
- develop and evaluate inferences and predictions that are based on data.
- determine an appropriate scale for representing an object in a scale drawing.
- interpret the concepts of a problem-solving task, and translate them into mathematics.

The graduate of the Renewable Energy Technician Option also will:

- appropriately size and recommend renewable energy system types for particular situations.
- understand and put into practice the installation protocol for Photovoltaic and Solar Domestic Hot Water Systems.

Employment Trends Employment opportunities in the Energy Management Industry are excellent. Students must consider the entire Western United States when seeking employment, as those willing to relocate will have greater employment opportunities.

Wages Energy Management, \$38,000-45,000 annually. Renewable Energy Technician, \$25,000-35,000 annually, depending on the area.

Costs in Addition to Tuition (estimate)*

Total \$750

* Subject to change without notice.

Number of New Students Admitted Annually Thirty

Criteria Used for Admission Prerequisite for admission is MTH 070. Must complete MTH 095 by the end of the first year.

Admission Information Science Department, Bldg. 16, Rm. 252/253, youngg@lanecc.edu or ebbager@lanecc.edu

Cooperative Education (Co-op) Co-op is a required and important part of the Energy Management program. It provides relevant field experience that integrates theory and practice while providing opportunities to develop skills, explore career options, and network with professionals and employers in the field. Students must complete six Co-op credits for the AAS degree. Students may use up to eighteen Co-op credits toward the degree requirements. Contact Larry Scott, Energy Management Co-op Coordinator, Bldg. 19, Rm. 154, (541) 463-5458.

Program Advisor Roger Ebbage, Science 253, (541) 463-3977, ebbager@lanecc.edu

First Year	Fall
BT 114 Introduction to Spreadsheets and Databases ^{*,D,G} ..	5
DRF 162 Blueprint Reading: Residential and Commercial ^{D,G}	3
MTH 095 Intermediate Algebra ^{*,2,M}	5
NRG 101 Introduction to Energy Management ^{1,D,G}	3
NRG 161 Introduction to Sustainability ^{D,G}	3
Total Credits	19
	Winter
NRG 111 Residential/Light Commercial Energy Analysis ^{*,1,3,D,G}	3
NRG 154 Alternative Energy Technologies ^{1,D,G}	3
NRG 160 Introduction to Water Resources.....	3
NRG 206 Co-op Ed:	
Energy Management Seminar	1
PH 101 Fundamentals of Physics ^{*,1,S}	4
WR 121 English Composition: Exposition and Introduction to Argument ^{*,5,6,W}	4
Total Credits	18
	Spring
NRG 121 Air Conditioning Systems Analysis ^{*,1,D,G}	3
NRG 124 Energy Efficient Methods ^{*,1,D,G}	3
NRG 131 Lighting Fundamentals ^{*,1,D,G}	3
PH 102 Fundamentals of Physics ^{*,1,S}	4
CG 203 Human Relations at Work ^{5,R}	3
Choice of: ^{4,5,6,R}	3
Physical Education Activity requirement	
Health requirement	
Total Credits	19

Standard footnotes:

* Prerequisite required

A Meets Arts/Letters requirement

B Must be passed with grade of "B" or better to use as a prerequisite

D Degree or certificate requirement; must be passed with grade of "C-" or better

G Must be taken for a grade, not P/NP; major requirement

H Meets Human Relations/Social Science requirement

M Meets Mathematics requirement

P Meets PE/Health requirement

R Required for AAS degree—see page 48

S Meets Science/Math/Computer Science requirement

W Meets Written Communications or English Composition requirement

Second Year

NRG 122 Commercial Air Conditioning Systems Analysis ^{*,1,D,G}	3
NRG 132 Lighting Applications ^{*,1,D,G}	3
NRG 141 Energy Investment Analysis ^{*,1,3,D,G}	3
WR 227 Technical Writing ^{*,5,6,A}	4
Restricted electives ⁵	3
Total Credits	16

Fall

NRG 112 Commercial Energy Use Analysis ^{*,1,D,G}	4
NRG 123 Energy Control Strategies ^{*,1,D,G}	4
NRG 206 Co-op Ed: Energy Management Seminar ^D	1
Choice of: ^{4,5,6,R}	3
Physical Education Activity requirement	
Health requirement	
Restricted electives ⁵	3
Total Credits	15

Winter

NRG 113 Building Energy Simulations ^{*,1,D,G}	4
NRG 142 Energy Accounting ^{*,1,3,D,G}	3
NRG 280 Co-op Ed: Energy Management ^{D,G}	6
Total Credits	13

Spring**Renewable Energy Technician Option****First Year**

BT 114 Introduction to Spreadsheets and Databases ^{*,D,G} ..	5
DRF 162 Blueprint Reading: Residential and Commercial ^{*,1,D,G}	3
MTH 095 Intermediate Algebra ^{*,2,M}	5
NRG 101 Introduction to Energy Management ^{1,D,G}	3
NRG 161 Introduction to Sustainability ^{D,G}	3
Total Credits	19

Fall

NRG 111 Residential/Light Commercial Energy Analysis ^{1,3,D,G}	3
NRG 154 Alternative Energy Technologies ^{*,1,D,G}	3
NRG 160 Introduction to Water Resources	3
NRG 206 Co-op Ed: Energy Management Seminar ^D	1
PH 101 Fundamentals of Physics ^{*,S}	4
WR 121 English Composition: Exposition and Introduction to Argument ^{*,5,6,W}	4
Total Credits	18

Winter

NRG 121 Air Conditioning Systems Analysis ^{*,1,D,G}	3
NRG 124 Energy Efficient Methods ^{*,1,D,G}	3
NRG 131 Lighting Fundamentals ^{*,1,D,G}	3
PH 102 Fundamentals of Physics ^{*,S}	4
Human Relations requirement ^{5, R}	3
Choice of: ^{4,5,6,R}	3
Physical Education Activity requirement	
Health requirement	
Total Credits	19

Spring**Second Year**

EET 129 Electrical Theory 1 ^{*,D,G}	4
NRG 141 Energy Investment Analysis ^{*,1,3,D,G}	3
NRG 155 Photovoltaic Design and Installation 1 ^{*,1,D,G}	4
NRG 157 Renewable Energy Systems ^{*,1,D,G}	3
WR 227 Technical Writing ^{*,5,6,A}	4
Total Credits	18

Fall

EET 130 Electrical Theory 2 ^{*,D,G}	4
NRG 156 Photovoltaic Design and Installation 2 ^{*,1,D,G}	4
NRG 158 Solar Thermal Design and Installation 1 ^{*,1,D,G}	4
NRG 206 Co-op Ed: Energy Management Seminar ^D	1
Choice of: ^{4,5,6,R}	3
Physical Education Activity requirement	
Health requirement	
Total Credits	16

Winter

NRG 159 Solar Thermal Design and Installation 2 ^{*,1,D,G}	4
NRG 280 Co-op Ed: Energy Management ^{D,G}	6
Total Credits	10

Spring

- 1 Instructor permission required
- 2 Must be completed by the end of the first year
- 3 Contains computation instruction to meet industry requirements
- 4 PE Activity requirement credits must be taken in at least two terms to satisfy degree requirement.
- 5 Can be taken any term
- 6 See catalog for AAS requirements

Restricted Electives are arranged with the program advisor.

Fabrication/Welding Technology**Offered by the Advanced Technology Division****Two-Year Associate of Applied Science Degree
Fabrication/Welding Technology****One-Year Certificate of Completion
Fabrication/Welding Technology****One-Year Certificate of Completion
Welding Processes**

Purpose To prepare the graduate for employment for entry-level and higher positions in metal fabrication industries. The graduate typically begins work in light or heavy metal fabrication as welders and/or fabricators. Training and experience can lead to careers in technical sales, supervision, estimating, quality control, inspection, specialty welding, and teaching. The fabrication/welding certificate program (the first year of the two-year degree) prepares graduates for employment as welders/fabricators. The welding processes certificate program prepares graduates for employment as welder-trainees or welders.

Learning Outcomes The graduate will:

- use blueprint reading skills, cost estimating, applied science of materials, and mathematics necessary to the profession.
- apply knowledge of forming, fitting, and welding processes.
- develop manufacturing plans for commercially viable metal products.
- demonstrate advanced fabrication techniques and welding processes and application including GTAW, programmable, plasma cutting, structural and pipe fitting, metallurgy, quality control procedures, and business operation.
- demonstrate and use industry safety standards.
- use appropriate library and information resources to research professional issues and support lifelong learning.
- use mathematical formulas to calculate area, volume, and weight of metal objects.

Employment Trends Statewide, 250 annual openings for welders/fabricators are projected in Oregon and 35 openings are projected annually in Lane County. Competitively trained workers should find reasonable employment opportunities. Those with an associate degree will have a competitive advantage in this labor market.

Wages Statewide average \$16 hourly, \$34,000 average annually (\$45,000 annually for fabricators). Lane County average, \$17 hourly, \$35,000 annually.

Costs in Addition to Tuition and Registration Fees (estimates)*

Books	\$ 750
Tools	\$ 405
Fees	\$ 650
Total	\$1,775

* Subject to change without notice.