Lane Community College SM

2018 – 2019
Career Technical Programs

Institute for Sustainable Practices
541.463.6160

lanecc.edu

Energy Management Technician (Online)

Associate of Applied Science Degree
Associate of Applied Science Degree:
Building Controls Technician Option
One Year Certificate of Completion

Program Coordinator Roger Ebbage, Bldg. DCA, Rm. 404, *ebbager@lanecc.edu*541.463.6160

Purpose The Energy Management Technician is exclusively online and prepares students for a career in Energy Management. Through this program, students will learn how residential and commercial building systems consume energy by understanding how they work and the interaction between one another. Students will be able to evaluate and measure consumption and make an informed recommendation on building system energy efficiency improvements. Employment is found with Government, Utilities, Engineering Firms, School Districts, Community Action Programs, and Residential Weatherization Practitioners!

Learning Outcomes Upon completion of this degree/certificate the graduate will:

- evaluate the energy use patterns for residential and commercial buildings and recommend energy efficiency measures and renewable energy solutions for high energy consuming buildings.
- understand the interaction between energy consuming building systems and make energy use reduction recommendations based on that understanding.
- construct energy evaluation technical reports and make presentations for potential project implementation.
- 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., excel and other computer software).
- develop and evaluate inferences and predictions that are based on collected data.
- interpret the concepts of a problem-solving task, and, using mathematics, translate concepts into energy related projects.
- use appropriate library and digital information resources to research professional objectives and support lifelong learning.
- read and analyze building blue prints including floor, mechanical, and electrical plans. Read elevations, sections, schedules, and construction notes.

Accreditation Energy Management, Renewable Energy Program Accreditation awarded by the Interstate Renewable Energy Council, (IREC Standard 01022:2011 for accreditation and certification of renewable energy training programs and instructors).

Licensing & Certification Association of Energy Engineers Certified Energy Manager In Training (EMIT)

Admission Information Roger Ebbage, Bldg. DCA, Rm. 404, *ebbager@lanecc.edu*.Students must apply to the program by completing an Energy Program application. Applicants must have completed Math 065 or 070 prior to enrollment. Individual courses may be taken with department/instructor approval.

Advising and Counseling Roger Ebbage, Bldg. DCA, Rm. 404, *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 their degree requirements. Contact Gerry Meenaghan at: *MeenaghanG@lanecc.edu*Phone: 541.463.5883 Office: Building 19, Room 154

Job Openings Projected through 2020

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.

Energy Management: $40,000-$50,000 annually.

Costs Estimate based on 2017-18 tuition and fees. Consult Lane's website for updated tuition. * Subject to change without notice.

Program Specific Fees	$1,000
Resident Tuition and General Student Fees	$10,227
Total Estimated Cost	$11,227

*Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

- Completion of Math 65 or Math 70 or Program Coordinator permission must be obtained prior to enrolling in the program.
- It is recommended but not required, that General Education requirements are taken prior to entering the program.
- Deviation from the prescribed course sequence will impact a student's ability to complete the program in a two year time frame.
- All NRG courses are offered fully online.
- MTH 95 can be taken any term but must be completed by the end of the first year.
- Directed Electives may be taken online or locally at Lane Community College or transferred in from another institution.
- Lane Community College does not offer CST 110, Ph 101/102, online. These courses must be taken locally at Lane Community College or transferred in from another institution.
- Health/PE requirement, Directed Electives, WR 121, and WR 227 may be taken any term.
- Prerequisites are required for some courses. See course descriptions.

First Year	**Fall**
MTH 095 Intermediate Algebra or higher	5
BT 123 MS EXCEL for Business	4
NRG 101 Introduction to Energy Management	3
PH 101 Fundamentals of Physics	4
CST 110 Blueprint Reading 1	3
	Winter
Choice of: WR 121 Academic Composition / WR 121_H Academic Composition	4
NRG 111 Residential/Light Commercial Energy Analysis	3
PH 102 Fundamentals of Physics	4
NRG 103 Sustainability in The Built Environment	3
NRG 154 Alternative Energy Technologies	3

Energy Management Technician (Online)

	Spring
NRG 124 Energy Efficiency Methods	4
NRG 131 Lighting Fundamentals	3
WR 227 Technical Writing	4
NRG 121 Air Conditioning System Analysis	3
NRG 206 A/B Coop Seminar	2
Second Year	**Fall**
NRG 122 Commercial Air Conditioning System Analysis	3
Human Relations Requirement	3
WATR 202 Fostering Sustainable Practices	3
Directed Elective	3
	Winter
NRG 112 Commercial Energy Use Analysis	4
NRG 123 Energy Control Strategies	4
PE/Health Requirement	3
Directed Elective	3
	Spring
NRG 142 Energy Accounting	3
NRG 110 Energy Efficiency Industry Software Applications	4
NRG 280 Co-op Ed: Energy Management	6
Directed Electives	
DRF 167 CAD 1	4
DRF 168 CAD 2	4
BT 223 MS EXCEL for Business-Expert	4
SPAN 101 Spanish, First-Year	5
SPAN 102 Spanish, First-Year	5
BA 101 Introduction to Business	4
PS 297 Environmental Politics	4
PSY 201 General Psychology	4
COMM 100 Basic Communications	4
COMM 105 Listening and Critical Thinking	4
COMM 111 Fundamentals of Public Speaking	4
COMM 112 Persuasive Speech	4
COMM 218 Interpersonal Communication	4
MTH 111 College Algebra	5
Any Water Conservation Technician Course	
Additional NRG280 Coop Ed	
NRG 105 Green Careers Exploration	3

Energy Management Technician: Building Controls Technician Option

Offered by the Institute for Sustainable Practices, 541.463.6160

Associate of Applied Science Degree Option

Program Coordinator Roger Ebbage, Bldg. DCA, Rm. 404, *ebbager@lanecc.edu*541.463.6160

Purpose Through this program, students will learn how residential and commercial building systems consume energy by understanding how systems work and the interaction between one another. Students will be able to evaluate and measure consumption and make an informed recommendation on building system energy efficiency improvements. Students will also learn the basics of Building Controls systems and how they are fundamental to achieving higher levels of energy efficiency through building operation. Employment is found with Controls System Suppliers, Controls Installation Contractors, Government, Utilities, Engineering Firms, School Districts.

Learning Outcomes The student who successfully completes all Energy Management Technician: Building Controls Technician Option requirements will:

- 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., excel and other computer software).
- construct energy evaluation technical reports and make presentations for potential project implementation.
- develop and evaluate inferences and predictions that are based on collected data.
- evaluate the energy use patterns for residential and commercial buildings and recommend energy efficiency measures and renewable energy solutions for high energy consuming buildings.
- interpret the concepts of a problem-solving task, and, using mathematics, translate concepts into energy related projects.
- read and analyze building blue prints including floor, mechanical, and electrical plans.
- understand the interaction between energy consuming building systems and make energy use reduction recommendations based on that understanding.
- use appropriate library and information resources to research professional issues and support lifelong learning.
- analyze a variety of commercial HVAC and lighting systems from a controls perspective.
- become familiar with modules and electronics commonly used to implement building automation schemes.
- write building control systems schemes.
- understand control system management software.
- diagnose and troubleshoot existing building control systems.

Licensing & Certification Association of Energy Engineers Certified Energy Manager In Training (EMIT)

Admission Information Roger Ebbage, Bldg. DCA, Rm. 404, *ebbager@lanecc.edu.*Students must apply to the program by completing an Energy Program application. Applicants must have completed Math 065 or 070 prior to enrollment. Individual courses may be taken with department/instructor approval.

Advising and Counseling Roger Ebbage, Bldg. DCA, Rm. 404, *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 their degree requirements. Contact Gerry Meenaghan at: *MeenaghanG@lanecc.edu*Phone: 541.463.5883 Office: Building 19, Room 154

Job Openings Projected through 2020

Employment opportunities in the Energy Management - Building Controls Industry are excellent. Students must consider the entire Western United States when seeking employment, as those willing to relocate will have greater employment opportunities.
Building Controls Technician: $40,000-65,000

Program Specific Fees	$1,000
Resident Tuition and General Student Fees	$10,227
Total Estimated Cost	$11,227

*Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

- Completion of Math 65 or Math 70 or Program Coordinator permission must be obtained prior to enrolling in the program.
- It is recommended but not required, that General Education requirements are taken prior to entering the program.
- Deviation from the prescribed course sequence will impact a student's ability to complete the program in a two year time frame.
- Human Relations, Health/PE requirements, WR 121, and WR 227 may be taken any term.

Energy Management Technician (Online)

- MTH 95 can be taken any term but must be completed by the end of the first year
- Prerequisites are required for some courses. See course descriptions.

First Year	**Fall**
BT 123 MS EXCEL for Business	4
NRG 101 Introduction to Energy Management	3
PH 101 Fundamentals of Physics	4
MTH 095 Intermediate Algebra	5
CST 110 Blueprint Reading	3
	Winter
NRG 111 Residential/Light Commercial Energy Analysis	3
CS 133JS Beg. Programming: JavaScript	4
CS 179 Introduction to Computer Networks	4
PH 102 Fundamentals of Physics	4
	Spring
NRG 121 Air Conditioning System Analysis	3
NRG 124 Energy Efficiency Methods	4
NRG 131 Lighting Fundamentals	3
NRG 103 Sustainability in The Built Environment	3
NRG 206 A/B Coop Seminar	2
	Summer
Choice of: WR 121 Academic Composition WR 121_H Academic Composition	4
NRG280 - Cooperative Education: Energy Management to be taken Summer term	6
Second Year	**Fall**
NRG 185 Lighting Controls	4
NRG 122 Commercial Air Conditioning System Analysis	3
NRG 123 Energy Control Strategies	4
WR 227 Technical Writing	4
	Winter
NRG 112 Commercial Energy Use Analysis	4
NRG 182 Commercial HVAC Controls	4
NRG 181 Direct Digital Controls 1	4
PE/Health requirement	3
Human Relations Requirement	3
	Spring
NRG 184 Direct Digital Controls 2	4
NRG 183 Controls Retuning and Troubleshooting	4
NRG 142 Energy Accounting	3

Energy Management Technician

Offered by the Institution for Sustainable Practices 541.463.6160

One-Year Certificate of Completion

Program Coordinator Roger Ebbage*, ebbager@lanecc.edu*541.463.6160

Purpose A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing energy-efficient systems or monitoring energy use. Includes instruction in principles of energy conservation, instrumentation calibration, monitoring systems and test procedures, energy loss inspection procedure,s energy conservation techniques, and report preparation. Equipped with the appropriate set of skills, an Energy Management Technician also oversees the energy purchase and consumption of a building (residential or commercial) or portfolio of buildings. The Energy Management Technician will make energy efficiency recommendations to building owners as a result of investment level 3 energy audits.

Learning Outcomes Upon completion of this 1-year certificate, the student will be able to:

- evaluate the energy use patterns for residential and commercial buildings and recommend energy efficiency measures and renewable energy solutions for high energy consuming buildings.
- understand the interaction between energy consuming building systems and make energy use reduction recommendations based on that understanding.
- construct energy evaluation technical reports and make presentations for potential project implementation.
- 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., excel and other computer software).
- develop and evaluate inferences and predictions that are based on collected data.
- interpret the concepts of a problem-solving task, and, using mathematics, translate concepts into energy-related projects.
- use appropriate library and digital information resources to research professional objectives and support lifelong learning.
- read and analyze building blueprints including floor, mechanical, and electrical plans. Read elevations, sections, schedules, and construction notes.

Licensing & Certification Association of Energy Engineers Certified Energy Manager in Training (CEMEMIT)

Admission Information Contact Roger Ebbage*, ebbager@lanecc.edu* or complete the program application: *lanecc.edu/sustainability/nweei/program-admission-form*

Advising and Counseling Roger Ebbage *ebbager@lanecc.edu* 541.463.*6160, nweei.org/degrees/*

Cooperative Education (Co-op) Coop is not required but available through the Lane Community College Cooperative Education. Contact Gerry Meenaghan, *meenaghang@lanecc.edu*541.463.5883

Job Openings Projected through 2020

Employment opportunities in the Energy Management and Building Automation (controls) industries are excellent. Students must consider the entire northwest when seeking employment as those willing to relocate will have the best employment opportunities.

$40,000 - $50,000 Annually

Costs Estimate based on 2017-18 tuition and fees. (Consult Lane's website for updated tuition.) Subject to change without notice.

Program Specific Fees	$500
Resident Tuition and General Student Fees	$6,000
Total Estimated Cost	$6,500

*Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

- Prerequisites are required for some courses. See course descriptions.
- Completion of Math 65 or Math 70 or Program Coordinator permission must be obtained prior to enrolling in the program.
- Completion of Physics 102 or Program Coordinator permission must be obtained prior to enrolling in the program.
- MTH 95 can be taken any term.
- WR 227 can be taken any term.
- Human Relations Requirement can be taken any term.

Energy Management Technician (Online)

	Fall
CG 203 Human Relations at Work	3
NRG 101 Introduction to Energy Management	3
WR 227 Technical Writing	4
MTH 095 Intermediate Algebra or higher	5
CST 110 Blueprint Reading 1	3
	Winter
NRG 111 Residential/Light Commercial Energy Analysis	3
NRG 121 Air Conditioning System Analysis	3
NRG 124 Energy Efficiency Methods	4
NRG 131 Lighting Fundamentals	3
PH 102 Fundamentals of Physics or higher	4
	Spring
NRG 112 Commercial Energy Use Analysis	4
NRG 142 Energy Accounting	3
NRG 110 Energy Efficiency Industry Software Applications	4
NRG 123 Energy Control Strategies	4
NRG 122 Commercial Air Conditioning System Analysis	3

To request this information in an alternate format please contact the Center for Accessible Resources at (541) 463-5150 or *accessibleresources@lanecc.edu*.