



2017 – 2018
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

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

Purpose The Energy Management Technician option 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 and 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.

Wages

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

Costs (Estimate based on 2016-17 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

- Deviation from the prescribed course sequence will impact a student's ability to complete the program in a two year time frame.
- 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.
- 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.
- Deviation from the prescribed course sequence will impact a student's ability to complete the program in a two year time frame.
- 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
BT 123 MS EXCEL for Business.....	4
NRG 101 Introduction to Energy Management	3
MTH 095 Intermediate Algebra.....	5
PH 101 Fundamentals of Physics	4
CST 110 Blueprint Reading 1.....	3

Energy Management Technician (Online)

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

Winter

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

Spring

NRG 122 Commercial Air Conditioning System Analysis	3
Human Relations Requirement.....	3
WATR 202 Fostering Sustainable Practices	3
Directed Elective	3

Fall

NRG 112 Commercial Energy Use Analysis.....	4
NRG 123 Energy Control Strategies.....	4
PE/Health Requirement	3
Directed Elective	3

Winter

NRG 142 Energy Accounting	3
NRG 110 Energy Efficiency Industry Software Applications	4
NRG 280 Co-op Ed: Energy Management	6

Spring

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

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Advising and Counseling Roger Ebbage, Bldg. DCA, Rm. 404, ebbager@lanecc.edu

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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.

Wages

Building Controls Technician: \$40,000-65,000

Costs (Estimate based on 2016-17 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.
- Human Relations, Health/PE requirements, WR 121, and WR 227 may be taken any term.
- 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.

Energy Management Technician (Online)

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