Associate of Applied Science Option Energy Management - Building Controls Technician

## BACKGROUND

We are pleased to present Building Controls Technician AAS Option curriculum for your review and approval.

The Building Controls Technician program will prepare energy management technicians to use building controls systems for improvements in energy efficiency. The new curriculum includes pneumatic and digital HVAC system controls, troubleshooting and modifying control loops, control loop logic and software, and lighting controls. This degree option prepares students to work as building automation control system technicians by applying basic engineering principles and technical skills in support of engineers and other professionals engaged in developing and using air conditioning, refrigeration, and heating systems.

Employment demand for this occupation within the northwest region is strong and growing as energy costs continue to rise and automated systems continue to be installed in commercial settings. At the same time, an aging controls technician population is approaching retirement, and controls manufactures are hiring controls technicians away from lower paying technician jobs. In addition, few educational institutions are responding to the controls industry demand.

OLMIS projects 114 statewide annual openings for HVAC technicians, with 9 positions annually in Lane County. Median wages for this occupation statewide are \$21.30 hourly and average \$47,244 annually; Lane County median wages are \$18.89 hourly and \$42,354. There are at a minimum 144 annual positions nationally for which graduates will also qualify as general maintenance and repair workers. For this type of position, the Lane County median wage is \$17.76 hourly and averages \$38,469 annually. The Oregon Statewide median wage is \$17.83 hourly and averages \$38,603 annually.

Program outcomes are based on input from the advisory committee for the Energy Management AAS program. The program design incorporates 80 credits of the existing Energy Management AAS coursework, and will require development of five new courses. Approximately 37 credits of the required coursework will also transfer to baccalaureate institutions.

The program will seek articulation agreements with the Oregon Institute of Technology Bachelor of Applied Science program.

## Learning Outcomes The graduate will:

- Under general supervision, conduct preventive maintenance, repair, installation, and commissioning and general servicing of systems (including detailed troubleshooting of systems).
- Serve customers through direct, on site, customer interface.
- Mentor mechanical technicians on building automation activities.
- Properly complete required project and service documentation.

- Diagnose and repair complex electronic control system malfunctions requiring extensive knowledge of a variety of electronic or digital controls systems and ability to test and write modifications systems software.
- Provide sketches of field changes and discrepancies for engineering corrections and drawings.
- Communicate with customers upon arrival and before leaving a work site.
- Keep customers informed on the nature of service provided outstanding issues and recommend system enhancements, upgrades, and or repairs.
- Manage assigned work to meet professional standards of time and customer satisfaction.
- Interact with managers or subcontractors on projects to coordinate activities as required in an ethical and professional manner.
- Adheres to all customer safety standards.
- Provides safety awareness on work sites.
- Provide training to customers on electronic control systems operations.
- Mentor and trains mechanical workforce on building automation systems.
- Provide support to the mechanical staff on non-complex, non-critical equipment.
- Compile job documentation, such as certificate of completion, customer training forms, training certificates and punch lists.
- Conduct extensive self study (reading, research and practice) to improve and maintain technical proficiency in company's product lines.

## **Program Development/Budget Information**

The program will be housed in the Science Department. Upon advisory committee recommendations, the Energy management - Resource Conservation AAS Option will be suspended and replaced by this new option. Program and course development support may be provided through the Perkins grant; and additional support may be requested through the Unit Plan process for further course development. Technical field courses may carry additional fees to acquire and maintain field equipment.

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## **Required Courses**

Common Core: Energy Management AAS and Controls Technician Option Credits			
BT 123	Excel (Energy Program contextualized)	4	
CG	Human Relations requirement	3	
HPE	P.E. or Health requirement	3	
MTH 095	Intermediate Algebra	5	
MTH 111	College Algebra	5	
NRG 101	Introduction to Energy Management	3	
NRG 102	Blueprint Reading: Residential and Commercial	3	
NRG 103	Sustainability in the Built Environment	3	
NRG 111	Residential/Light Commercial Energy Analysis	3	
NRG 112	Commercial Energy Use Analysis	4	
NRG 121	Air Conditioning Systems Analysis	3	
NRG 122	Commercial Air Conditioning Systems Analysis	3	
NRG 123	Energy Control Strategies	4	
NRG 124	Energy Efficient Methods	4	
NRG 131	Lighting Fundamentals	3	
NRG 141	Energy Investment Analysis	3	
NRG 206A	Co-op Ed: Energy Management Seminar	1	
NRG 206B	Co-op Ed: Energy Management Seminar	1	
NRG 280	Co-op Ed: Energy Management	6	
PH 101	Fundamentals of Physics	4	
PH 102	Fundamentals of Physics	4	
WR 121	English Composition: Exposition and Introduction to Argument	4	
WR 227	Technical Writing	4	
	Total Credits Shared with AAS	80	

Courses Unique to Building Controls Technician Option		Credits
CIT	Computer Programming	4
NRG 181	DDC 1	4
NRG 182	Commercial HVAC Controls	4
NRG 183	Controls Retuning and Troubleshooting	4
NRG 184	DDC 2	4
NRG 185	Lighting Controls	4
	Unique Credits	24
	Total Credits	104
	% Credits Shared with AAS	77%