Education/Training on Using Building Controls Strategies to Maximize Energy Efficiency

Energy Policy, Trends, and Initiatives | Track 1
Kerly Acosta Hitchcock, P.Eng, Program Head for Sustainable Energy Management
THE BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY
EDUCATION
FOR A COMPLEX WORLD
WHO AM I

Kerly Acosta Hitchcock

Mechanical Engineer

Sustainability
WHAT WE WILL COVER

- British Columbia Institute of Technology (BCIT)
- Evolution of Online Learning
- Centre for Energy Systems Applications (CESA)
- Online Energy Management Training
  - Sustainable Energy Management (SEMAC)
  - Building Controls & Energy Management (BCEM)
  - Other Courses
WHAT IS A POLYTECHNIC?

Polytechnic programs are skills intensive and technology-based. Hands-on, experiential learning opportunities are integral to the curriculum, providing students with practical training for jobs in demand.*
PROGRAM DELIVERY

Full-Time or Part-Time Co-operative Education

Online & Distance Learning Apprenticeship Training

Satellite Locations

- Burnaby (CARI)
- DW Poppy Secondary School (DWPS)
- Garibaldi Secondary School (GSS)
- Graham Road Campus - Kelowna
- Langley Secondary School (LSS)
- North Delta Secondary School (NDSS)
- Rutland Senior Secondary School (RSS)
- Samuel Robertson Technical Secondary School (SRTSS)
- Princess Margaret Secondary School (PMSS)
- Westview Secondary School (WSS)
EVOLUTION OF ONLINE LEARNING

1997 Internet Delivery

2002 Online courses

2009 Simulation courses

2016 Augmented Reality

2017 Virtual Reality

2020 ....?
Schools within BCIT

- School of Business
- School of Computing & Academic Studies
- School of Construction & the Environment
- School of Energy
- School of Health Sciences
- School of Transportation
THE SCHOOL OF CONSTRUCTION AND THE ENVIRONMENT
EDUCATION FOR A COMPLEX WORLD
CENTER FOR ENERGY SYSTEMS APPLICATIONS (CESA)

http://commons.bcit.ca/energy/
Energy Management

Conserving Energy => Saving Money

Meet Comfort

Source: https://www.worldstandards.eu/electricity/plugs-and-sockets/ab/
SUSTAINABLE ENERGY MANAGEMENT (SEMAC)

- BC Hydro finding Energy Managers
- Funding $ from BC Hydro, NRCAN
- Later improvements were made thanks to FortisBC
“One of the quickest and cost effective ways to save energy in a building is to modify the controls”
BUILDING CONTROLS AND ENERGY MANAGEMENT (BCEM)

- Came from the SEMAC program
- New program – First cohort: 2016-17.
- A developing industry that will continue to grow and evolve
- Industry had requested it!
- BC Hydro and Concert Properties
THE BCEM AND SEMAC PROGRAMS

- Each 9 courses forming an Advanced Certificate
  - 356 hours in length
- Taught online in a part-time studies format
  - 1.5 years- one night a week of webinar classes
- One cohort intake per year
- 4 courses are common to both programs
BCEM PROGRAM GOALS

Graduates of the Advanced Certificate in Building Controls and Energy Management (BCEM) will be able to:

- Apply the fundamentals of energy management and integrate them into the design, planning, development and operations of building systems and control strategies in HVAC, lighting, security, etc.
- Specify and work with methods of electronic building documentation in order to support building controls operations.
- Navigate the typical control architectures, networking, and communication protocols.
- Assess building analytics tools.
- Apply building codes and standards pertaining to building systems and operations.
• Maintain and manage the life-cycle of building controls systems and associated equipment.
• Build a culture of conservation using the controls features inherent in modern building systems.
• Write and interpret building controls specifications.
• Develop a business case to support building improvements.
• Apply continuous optimization principles to building systems and operations.
• Specify and review the various commissioning processes for new and existing building systems.
• Develop data management strategies.
PROGRAM STRUCTURE – 1.5 YEAR

Fall (Sept – Dec)
- CESA 5100 (10 weeks)
- CESA 5300/5320 (15 weeks)
- CESA 5850/5820 (10 weeks)
- CESA 5900/5920 (10 weeks)

Year 1

Year 2

Winter (Jan–April)
- CESA 5800 (10 weeks)
- CESA 5500&5600/5620 (5+10 Weeks)

Year 1

Spring (April–June)
- CESA 5400/5420 (15 weeks)
- CESA 5700 (10 weeks)

Year 1
Hello Everyone,

I'm glad that you have made it to D2L. On September 9th at 8:30am PST we will be having our Welcome Day session. This will be an introduction to using Blackboard to participate with live online sessions, and review the SEMAC and BCEM programs.

I have set up a "Test Room" that will be open until the class starts on the 9th for you to practise logging in to the system to make sure that you are properly logged in. If you have problems setting everything up on your home computer please call the BCIT technology service desk, http://www.bcit.ca/techhelp/.
USING REAL-LIFE EXAMPLES

https://commons.bcit.ca/factorfour/sample-page/
BCEM PREREQUISITES

• Recognized diploma or degree
  Or
• An Interprovincial Red Seal
  Or
• Twenty years of related work experience
  Or
• Completion of the Advanced Certificate in Sustainable Energy.
  And
• Math and English requirements as noted on the web page.
• Additionally, it would be preferable if applicants have working experience in any of: operations and maintenance, facilities management, building controls engineering, building controls integration.
SEMAC PREREQUISITES

• Recognized diploma or degree + 5 yrs work experience
  
  Or

• An Interprovincial Red Seal + 5 yrs work experience
  
  Or

• Twenty years of related work experience.

  And

• Math and English requirements as noted on the web page.
• Additionally, it would be preferable if applicants have working experience in any of: operations and maintenance, facilities management, building controls engineering, building controls integration.
HOW DO I APPLY?

Check to Make Sure you Meet the Entrance Requirements

Complete Pre-Entry Assessment and Send it with Resume

Apply to Program (make sure you attach all required documents)

Get accepted!

Attend Welcome Day
ENROLLING IN THE PROGRAM

• Applicants are accepted on a first come, first qualified basis (for 25 seats) SEMAC, BCEM (15 seats)

• You can apply on-line (2 steps),
WANT TO TAKE JUST A FEW COURSES ONLY?

- We will be offering a limited number of seats in each course, if one does not want to take the whole program.
- You will need to demonstrate you can meet pre-requisite knowledge.
- You will only be allowed to take up to an additional 3 courses without enrolling in the full program
WHO MIGHT TAKE THE BCEM PROGRAM?

• Seeking career change and/or individuals already in the industry.

• As long as you meet the pre-requisites.

• Similar list as for SEMAC.
Career Pathways

Program Completion

Energy Specialist (ES)

Energy Manager (EM)

Other

CEM
LEED
WHO MIGHT TAKE THE BCEM PROGRAM?

Current job titles of people typically working in this emerging field that could benefit from this program are:

- Engineers, P.Eng. (Mechanical, Control Systems Designer)
- Power Engineers (Control Technicians, Facility Managers)
- Controls Contractors
- Energy Managers
- Facility Operators
- Energy Modelers
- Analytics Specialists
- Systems Integrator (Manager of Integration, System Integration Operator)
- Trades
- Commissioning Agents
- Building Operators
- Sustainability Managers
- Engineering Technologists
- Vendors or suppliers of automation equipment
To date, there is no job title that reflects the uniqueness of this emerging field. Potential employment areas for graduates of this program are:

- Engineering Design Firms
- Engineering Commissioning Firms
- Energy Management Jobs
- Facilities Management and Operations Companies
- Construction Companies
- Real Estate and Property Management Companies
- Controls Companies
EMPLOYERS

The following organizations are examples of where students have found work:

- Institutions
- Consulting Firms
- Health Care
- Industrial Manufacturing
- Non-Profit Associations
- Municipalities
- Hospitality Industry
- Private Consulting Business
COMMUNITY ENERGY MANAGEMENT

Online in partnership with Community Energy Association

- **CESA 5110**: Introduction to Community Energy & Emissions Planning
- **CESA 5210**: Community-Based Renewable Energy
- **CESA 5310**: Green Energy & Local Economic Development
- **CESA 5410**: Financing & Governance for Green Energy Systems
- **CESA 5510**: Reducing Energy Use in New & Existing Buildings
- **CESA 5610**: Low Carbon Transportation

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Prepare for Tomorrow

Community Energy Management

Are you a city planner, engineer, operations manager, transportation coordinator, or financial director? If so, community energy management should be incorporated into your strategic plans.

Gain the knowledge and resources you need to conserve energy, decrease emissions, and reduce energy costs in your community.

BCIT is offering part-time, online courses developed in partnership with the Community Energy Association.

Register now, bcit.ca/cesa5110
CESA 7100 - ENERGY MODELING FOR BUILDING PROFESSIONALS

- Energy Performance design.
- Aspects Impacting design.
- Apply energy model to design.
- Use IESVE, EE4, eQUEST, Revit, BIM and more tools.
SAVE THE DATE!

ECOCITY WORLD SUMMIT 2019
VANCOUVER • CANADA

OCTOBER 7-11, 2019
Vancouver Convention Centre West
eccity2019.com | #Ecocity2019
THANK YOU

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