



ELECTRICAL COURSE

COURSE OVERVIEW

This course is intended for individuals looking to become energy auditors or for auditors presently working in the Con Edison Small and Medium Business (SMB) Program and other small commercial energy efficiency programs. It is designed to provide knowledge and skills to auditors to increase the adoption of energy measures by small commercial customers and cover basic technologies as well as additional technologies that may not be part of a standard audit. Emphasis is placed on the auditor's ability to recognize the customer's energy needs, systems, and opportunities and how these opportunities may relate to other key aspects of the business.

COURSE OBJECTIVES

The objective of this course is to improve energy efficiency programs serving the small commercial market segment. The auditor is seen as a key catalyst in the decision-making process of the small commercial customer. Accordingly, the training program seeks to strengthen auditor skills so they may assist customers with what have become standard technology upgrades (e.g., – lighting), as well as more advanced technologies. General course objectives are provided here. More specific Learning Objectives are provided for each class/topic.

- To help the auditor understand the needs and concerns of small commercial business operators.
- To improve the auditor's ability to recognize benefits, both energy and non-energy, of energy reduction measures in small commercial facilities.
- To broaden the appreciation of technology opportunities available in small commercial facilities.
- To enable energy auditors to play a role in identifying and supporting cost-effective technology applications.

COURSE STRUCTURE

- The course consists of 20 class sessions, for a total of 60 hours of classroom instruction.
- To successfully complete the training, students must meet attendance requirements, complete projects, and pass a final exam.
- Online readings will also be assigned on an optional/as-needed basis.

INSTRUCTIONAL TEAM

Antuan Cannon *Project Director*

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Clayton Gregory *Lead Instructor*

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Omar Duran *Tech Manager*

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GRADING

- Attendance will be counted toward the final grade; a maximum of one (1) absence is permitted.
- Students who attend all classes, complete, and submit the audit report project, and pass the final exam, will receive a "Certificate of Completion" from the Willdan Clean Energy Academy (WCEA).
- A grade of 75% is required to pass the final exam.













COURSE STRUCTURE











<p>Class 1</p> <p> Green Economy I</p> <ul style="list-style-type: none"> Green Economy Intro Sustainability Sector & Industries 	<p>Class 2</p> <p> Green Economy II</p> <ul style="list-style-type: none"> Intro to CDI/SMB Program Incentives Free Program 	<p>Class 3</p> <p> Green Economy III</p> <ul style="list-style-type: none"> Intro to All Programs Requirements Qualifications 	<p>Class 4</p> <p> Green Economy IV</p> <ul style="list-style-type: none"> Intro to Standards & Codes
<p>Class 5</p> <p> Green Economy V</p> <ul style="list-style-type: none"> Political Landscape Energy Efficiency Laws Energy Efficiency Policies 	<p>Class 6</p> <p> Lighting I</p> <ul style="list-style-type: none"> Principles Measuring Lighting Quality & Quantity 	<p>Class 7</p> <p> Lighting II</p> <ul style="list-style-type: none"> System ID Lighting Types Lighting Technology 	<p>Class 8</p> <p> Lighting III</p> <ul style="list-style-type: none"> ECM Strategies Calculation
<p>Class 9</p> <p> Lighting IV</p> <ul style="list-style-type: none"> CDI/SMB Program SMART Overview Tool Creation 	<p>Class 10</p> <p> Lighting V</p> <ul style="list-style-type: none"> Standards & Codes ASHRAE TRM 	<p>Class 11</p> <p> Lighting VI</p> <ul style="list-style-type: none"> Procurement & Installation Fixture Mockup Sample Demos 	<p>Class 12</p> <p> HVAC I</p> <ul style="list-style-type: none"> Heating/Cooling Heat Movement Thermodynamics
<p>Class 13</p> <p> HVAC II</p> <ul style="list-style-type: none"> System ID System Types Distribution 	<p>Class 14</p> <p> HVAC III</p> <ul style="list-style-type: none"> ECM Strategies Calculations 	<p>Class 15</p> <p> HVAC IV</p> <ul style="list-style-type: none"> CDI/SMB Program SMART Overview Tool Creation 	<p>Class 16</p> <p> HVAC V</p> <ul style="list-style-type: none"> Standards & Codes ASHRAE TRM
<p>Class 17</p> <p> HVAC VI</p> <ul style="list-style-type: none"> Procurement & Installation Sample Demos 	<p>Class 18</p> <p> HVAC VII</p> <ul style="list-style-type: none"> Analysis Methods to Maximize Energy Saving Potential 	<p>Class 19</p> <p> HVAC VIII</p> <ul style="list-style-type: none"> SMB & Other Program Energy Saving Bundles Control & Measure Bundles 	<p>Class 20</p> <p> HVAC IX</p> <ul style="list-style-type: none"> Energy Modeling Software B3 NEO

CLASS SCHEDULE BREAKDOWN

WEEK 1

	MON	TUE	WED	THU	FRI
11:30am - 2:30pm	 Green Economy I	 Green Economy III	 Green Economy V	 Lighting II	 Lighting IV
2:30pm - 3:30pm	Break				
3:30pm - 6:30pm	 Green Economy II	 Green Economy IV	 Lighting I	 Lighting III	 Lighting V

WEEK 2

	MON	TUE	WED	THU	FRI
11:30am - 2:30pm	 Lighting VI	 HVAC II	 HVAC IV	 HVAC VI	 HVAC VIII
2:30pm - 3:30pm	Break				
3:30pm - 6:30pm	 HVAC I	 HVAC III	 HVAC V	 HVAC VII	 HVAC IX

AT THE END OF THIS COURSE, STUDENTS WILL:

- Be familiar with the industry-standard energy auditing and building performance analysis process: including building inspection data collection, input equipment diagnostics, equipment use, cost and efficiency calculations, and audit report generation
- Be able to perform ASHRAE Level 1 and Level 2 energy audits for small commercial facilities
- Be proficient in the use of Con Edison Commercial Direct Install (CDI) Excel tool software, Excel-based utility billing analysis, and energy benchmarking using the U.S. Environmental Protection Agency's (EPA's) ENERGY STAR® Portfolio Manager
- Have built sales and marketing, financial analysis, and project management skills along with energy auditing proficiency
- Be well-versed on relevant economic incentives including utility-administered programs such as Con Edison's Commercial Direct Install (CDI) Commercial & Industrial (C&I) and Demand Side Management (DSM), and government-administered programs such as NYSERDA's FlexTech, Existing Facilities and Green Jobs-Green New York (GJGNY); and understand the connection between these incentive programs and career opportunities, specifically in commercial lighting sales, auditing, and retrofitting
- Be able to Identify energy systems, including land HVAC, specifically the system types and components, efficiency ratings, and conservation measures
- Be familiar with energy efficiency strategies: including improved controls, operations and maintenance, retro-commissioning, retrofits and upgrades, and reduced consumption