BOC Level II Course Descriptions

COURSE STRUCTURE: Core and Electives

To become Level II certified, participants must attend four core classes (35 hours) and two supplemental classes (14 hours), complete class exams, and assigned projects.

BOC 201 – Preventive Maintenance & Troubleshooting Principles (core)

Covers the step-by-step process for starting and operating a preventive maintenance program that produces energy savings and equipment reliability. The primary focus is using the system that is set up to manage and implement preventive maintenance. A system review will be conducted from the work orders that are generated to the tools that maintenance staff select. Specific maintenance and operational issues are addressed in detail in 202 and 203 for electrical and HVAC. Emphasis on effective troubleshooting methods for problem identification, testing procedures, problem solving and operational analysis. Included are the developing of troubleshooting service records. One day.

BOC 202 – Advanced Electrical Diagnostics (core)

Students will learn to locate and repair electrical opens, shorts, overloads, and high resistance. The use of digital electric meters is taught along with maintenance and operational procedures to prevent electrical problems and evaluate power quality issues for the facility. One day.

BOC 203 - HVAC Troubleshooting & Maintenance (core)

Learn to troubleshoot and improve the efficiencies of the primary heating, cooling and ventilation systems of commercial buildings. This intensive two-day class will focus on system performance evaluation and efficiency optimization of central boiler and chiller systems, vapor-compression cycles of AC and heat pump systems, and distribution and ventilation systems. Two days.

BOC 204 – HVAC Controls & Optimization (core)

Learn energy efficient operation, maintenance, and service of HVAC controls and related devices for central air systems commonly found in commercial buildings. The course will cover control principles, components, computerized controls, and calibrating the controlled sub-systems. One day.

SUPPLEMENTAL COURSES:

BOC 210 – Advanced Indoor Air Quality

Learn to use the EPA recommended procedures for preventing and troubleshooting Indoor Air Quality problems for equipment and building operations. Sampling and troubleshooting will emphasize prevention and evaluation. Special emphasis will be placed on evaluation of mitigation approaches. One day.

BOC 211 – Motors in Facilities

Understand how motors work, and identify their uses and applications in facilities. Learn about the steps involved in a quality motor repair and how to make effective repair/ replacement decisions when motors fail. One day.

BOC 212 – Water Efficiency for Building Operators

Students will identify water savings measures in their building through detection and repair of leaks, operational changes, and low-cost equipment improvements. The class will start with an examination of water/sewer bills for savings opportunities. Other subject areas will include deduct meters, leaks, faucets, showerheads, toilets, urinals, cooling towers, garbage disposals, and landscapes. One-half day.

BOC 213 – Mastering Electric Control Circuits

Covers planning, retrofitting and/or troubleshooting basic electrical control systems. Topics include basic electric control concepts, wiring schematic fundamentals, and blueprint to panel-board recognition. Hands-on activities provide an understanding of ladder logic diagram symbols and their equivalent component counterparts. Upon completion, students will be able to identify and modify electric control diagrams, recognize diagram symbols and equivalent components, and comprehend basic electric control system strategies. One day.

BOC 214 –Introduction to Building Commissioning

Introduces the building commissioning process for new and existing buildings with an emphasis on existing building commissioning and the building operator's role. Topics include an overview of commissioning types, the elements of a successful project, working with a commissioning service provider, and the building operator's role in a commissioning project. At the completion of this class, students will understand the range of commissioning; when, where and what type of commissioning may be appropriate for their building or project; how building operators can reduce commissioning costs through active participation in the process; establish a list of expected work products (deliverables) from a third party commissioning service provider; and access the available resources. One day.

BOC 215 – Electric Motor Management

Attendees will learn how to calculate power costs for electric motors, and to identify improvements in motor management practices that make big differences in system reliability and electricity bills. Topics include calculating motor operating costs; practical uses of a motor database for repair/replace decisions; a model repair specification for ensuring quality repair; and a demonstration of free tools and software to improve motor management. The presentation format will include practical exercises, interactive discussion, and a demonstration of free motor database software. Half-day.

BOC 216 – Enhanced Automation and Demand Reduction

This class introduces technologies to help building personnel better manage their energy use, reduce electrical demand, and maintain or even improve the comfort of building occupants. Topics covered include how to screen buildings to assess enhanced automation (EA) potential, lighting and HVAC technologies and control strategies, energy management and information systems, as well as EA implementation strategies. Upon completion, students will have an understanding the complexities of enhanced automation and the role of the building operator in making EA really work in facilities. One day.