

Commercial Workforce Credentialing Council

Building Operations Professional Educational/Training Outline

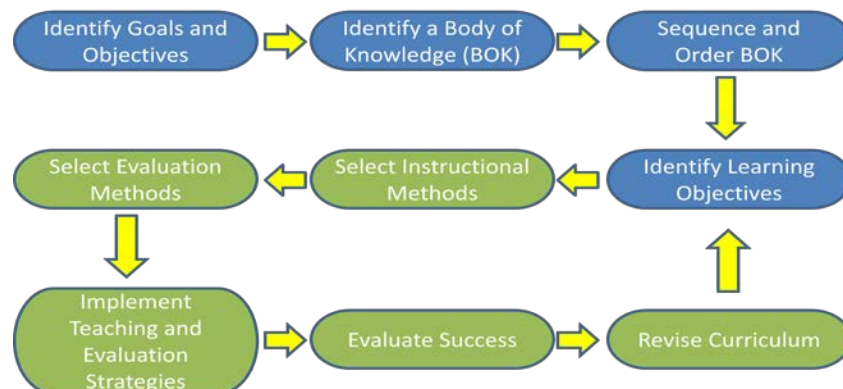
Introduction

A Building Operations Professional manages the maintenance and operation of building systems and installed equipment, and performs general maintenance to maintain the building's operability, optimize building performance, and ensure the comfort, productivity and safety of the building occupants. The major tasks of a Building Operations Professional are to:

- Manage Human Resources
- Conduct Building Operations Planning Activities
- Operate Buildings
- Optimize the Facility
- Conduct Budgeting Activities

Curriculum Design

The process used to define the components to be included in an educational/training program for Building Operations Professionals includes the stages as depicted in the following graphic:



The goals and objectives of an educational/training program must first be defined. For purposes of this program, the goals and objectives of the educational/training program are as follows:

- To prepare an individual to work as an entry level Building Operations Professional
- To provide basic building operations foundational knowledge to allow an individual to function sufficient to obtain the experience required to meet eligibility requirements for obtaining a professional credential as a Building Operations Professional.

Then a body of knowledge must be identified. In the case of Building Operations Professional the body of knowledge was identified through a job/task analysis. The body of knowledge was then sequenced and ordered to facilitate instruction of the content.

Curriculum

Following is a proposed curriculum. This curriculum is designed to cover all content for which a Building Operations Professional should be proficient. However not all content may be taught in a single course. For example some of the content may be part of other building construction programs. To use the course outline, community colleges and vocational institutions are recommended to review existing courses to identify content that may already be incorporated in existing courses. Then a course should be developed only to cover the remaining content not covered in existing courses. Instructional design experts and instructional staff would then select the learning activities to ensure the student learns the content including:

- Selection of textbooks and other appropriate course materials
- Creation of learning activities (lectures, handouts, performance activities, etc.)
- Creation of assessment and evaluation activities to verify learning
- Creation of curriculum evaluation activities

Course Outline

- I. Building Systems and Sciences
 - a. Air compressor and distribution systems
 - b. Air distribution systems
 - c. Building automation systems
 - d. Building control systems
 - e. Building envelope
 - f. Chilled water systems
 - g. Combined heat and power systems
 - h. Communication systems
 - i. Condenser water systems
 - j. Conveyance systems
 - k. Cooling generation equipment
 - l. District energy systems
 - m. Domestic hot water systems
 - n. Electrical power systems
 - o. Elevator/escalator systems
 - p. Emergency alert systems
 - q. Energy metering and monitoring systems
 - r. Energy recovery systems
 - s. Fresh air systems
 - t. Fuel storage and distribution systems (USTs, ASTs, etc.)
 - u. Heat generation equipments
 - v. HVAC control systems

- w. HVACR systems
- x. Irrigation equipment
- y. Life safety systems
- z. Lighting control systems
- aa. Lighting systems
- bb. Onsite energy generation systems (CHP, PV, Wind, Thermal, generators, etc.)
- cc. Potable cold water systems
- dd. Primary sewer/gray water systems
- ee. Process systems and controls
- ff. Pumps and pumping systems
- gg. Renewable energy systems
- hh. Specialty exhaust systems
- ii. Standpipe/sprinkler systems
- jj. Steam and hot water systems
- kk. Steam distribution systems
- ll. Thermal energy storage systems
- mm. Uninterruptible power systems (UPSs)/Building Energy Storage Systems (BSS)
- nn. Variable drive systems
- oo. Water distribution and control systems

II. Building Operations – Normal Operations

- a. Building Security Management (access, physical security, temporary access, unauthorized access, logs and records)
- b. Tenants/Occupant Management and Relations
- c. Building Operations Risk Management
- d. Regular Operational Inspections (elevators, etc.)
- e. Risk Management Activities
- f. Special Tenant/Occupant Requests and Issues
- g. Equipment Checking
- h. Facility Operations (Normal Conditions)
- i. Work Orders and Work Order Processes
- j. Indoor Air Environmental Quality
- k. Consumable Management
- l. Environmental Management
- m. Energy Management

III. Building Operations – Emergency Situations

- a. Emergency Drills
- b. Workplace Hazard Assessment
- c. PPE Requirements and Program
- d. Building Emergencies
- e. Inclement Weather Conditions/Issues
- f. Facility Operations (other than Normal Operations)

IV. Facility Maintenance and Repair

- a. Energy Maintenance and Repair
- b. Preventative/Predictive Maintenance

- c. Scheduled Maintenance and Repairs
- d. Life Safety System Maintenance and Repairs
- e. Test Emergency Power Systems and Repair
- f. Plumbing System Maintenance and Repairs
- g. Water/Wastewater System Maintenance and Repairs
- h. Irrigation System Maintenance and Repairs
- i. Security System Maintenance and Repairs
- j. Building Envelope Maintenance and Repairs
- k. Electrical System Maintenance and Repairs
- l. Lighting System Maintenance and Repairs
- m. Mechanical System Maintenance and Repairs
- n. Non-Facility Equipment Maintenance (food service, laundry, etc.) and Repairs
- o. Elevator/Escalator Maintenance and Repairs
- p. Access System Maintenance and Repairs
- q. Communication System Maintenance and Repairs
- r. Structural Support System Inspections and Repairs
- s. Medical and Laboratory Gas System Maintenance and Repairs
- t. Wall and Finish (paint, drywall, etc.) System Maintenance and Repairs
- u. Firewall Penetration Integrity Maintenance and Repairs
- v. Storm Drainage System Maintenance and Repairs
- w. Landscaping Maintenance and Repairs
- x. Air Compressor and Compressed Air System Maintenance and Repairs
- y. HVACR System Maintenance and Repairs
- z. Building Control System Maintenance (BAS, DDC, EMS, BMS, etc.) and Repairs
- aa. Hot Water and Steam System Maintenance and Repairs
- bb. Utility Submetering System Maintenance and Repairs
- cc. Onsite Power Generation System Maintenance and Repairs
- dd. Primary Sewer and Gray Water System Maintenance and Repairs
- ee. Manage Other Facility Use Systems (package tracking, etc.)
- ff. Pest Management
- gg. Building Improvement Management
- hh. Cleaning and Housekeeping Management
- ii. Tenant Improvement Management

IV. Human Resource Management

- a. Facility Workloads
- b. Staffing Productivity
- c. Building Staff Supervision
- d. Outsourced Service Providers and Contractors

V. Facility Operations Documents and Data

- a. Procedural Documentation (SOPs, BOPs, Operating Plans, Emergency Plans, etc.)
- b. Equipment Operating Plans
- c. Planned Maintenance Schedules
- d. Facility Operations Budgets and Budgeting
- e. Facility Capital Improvement Budgets and Budgeting
- f. Construction Standards and Guidelines

- g. Capital Renewal Plans
- h. Asset Inventories
- i. Logs
- j. As-Built Plans
- k. OEMs
- l. Inspection Records
- m. Data Retention Policies
- n. Manage Data (data capabilities and needs, offsite data storage, interoperability levels, data access levels, etc.)

V. Building Optimization

- a. Measurement and Verification
- b. Analyzing System Performance
- c. Reducing Energy Costs
- d. Optimize System Performance
- e. Sustainability Opportunities

V. Building Operations Tools

- a. Software
 - 1. Computerized maintenance management system (CMMS)
 - 2. BIM Viewer
 - 3. Building energy modeling software
 - 4. CAD Viewer
 - 5. Computer aided facility management (CAFM)
 - 6. ECAM (Energy Charting and Metrics)
 - 7. Energy Star Portfolio manager
 - 8. eQuest
 - 9. FEMP BLCC (Federal Energy Management Program, Building Life Cycle Costing)
 - 10. Geospatial information systems (GIS)
 - 11. Integrated work management system (IWMS)
 - 12. MotorMaster
 - 13. Spreadsheets
- b. Hand Tools
 - 1. Adjustable pliers
 - 2. Adjustable wrench
 - 3. Allen wrenches
 - 4. Amp Probe
 - 5. Ball-peen hammer
 - 6. Chisel
 - 7. Clamps
 - 8. Cleaning brushes
 - 9. Combination wrenches
 - 10. Deburring tool
 - 11. Extension magnet
 - 12. File
 - 13. Flashlight
 - 14. Fuse puller

15. Hacksaw
16. Hammers
17. Inspection mirror
18. Locking pliers
19. Lock-out/Tag-out equipment
20. Measuring devices
21. Multimeter
22. Nut drivers
23. Pipe wrenches
24. Pliers
25. Pocket knife
26. Pocket level
27. Ratchets
28. Rubber mallet
29. Screw drivers
30. Small power tools (hand electric drill)
31. Socket sets
32. Strap wrench
33. Tape measure
34. Toilet plunger
35. Torque wrench
36. Tube bender
37. Tubing cutters
38. Vises
39. Water key
- c. Personal Protective Equipment
 1. Arc flash protection (NFPA 70e)
 2. Back protection
 3. Dust masks
 4. Eye protection/safety glasses
 5. Face shield
 6. Fall protection
 7. Gloves
 8. Hardhat
 9. Hearing protection (plugs and muffs)
 10. Level C Suit (Tyvek, etc.)
 11. Respirator
 12. Rubber boots
 13. Safety harnesses
 14. Vests
 15. Welding jacket
 16. Work shoes (toe and shank protection)
- d. Specialized Tools
 1. Anemometer
 2. Borescope
 3. Circuit tracer
 4. Combustion analyzing instruments

5. Digital thermometer (surface and air)
 6. Dosimeter
 7. Flow meters
 8. Gas Analyzers
 9. Hydrometer
 10. Infrared thermometer
 11. Light meters
 12. Manometer
 13. Megohmmeter
 14. Moisture meter
 15. Plumbing snakes
 16. Power analyzer
 17. Psychrometers
 18. Refractometer
 19. Refrigeration tools
 20. RPM Meter
 21. Shaft alignment tools
 22. Smoke stick
 23. Sound meters
 24. Tachometers
 25. Temperature meters
 26. Thermal imaging camera
 27. Torch
 28. Tube brushing machines
 29. Velometer
 30. Vibration analysis instrument
- e. Technology Tools
1. Smart phone with:
 - i. Camera
 - ii. Wi-Fi access
 - iii. Internet access
 - iv. Two-way communications
 - v. Video recording/transmitting
 2. Computer with:
 - i. Spreadsheet applications
 - ii. Internet access
 - iii. Word processing applications
 - iv. Data storage
 - v. Graphics software
 - vi. External data storage/backup
 3. Data gathering:
 - i. Data loggers with sensors (t/h/kw/on-off)
 - ii. Utility tariffs
 - iii. Real time pricing data stream
 - iv. DDC
 - v. BEMS/BIMS

Learning Objectives

The following learning objectives are identified as the desired outcome of instruction. These objectives should be reviewed and sequenced according to like objectives by subject matter experts familiar with the content.

1. Upon completion of the course, the student will be able to develop a workload analyses.
2. Upon completion of the course, the student will be able to develop scopes of work for building operations personnel
3. Upon completion of the course, the student will demonstrate how to determine equipment multipliers by evaluating the equipment
4. Upon completion of the course, the student will be able to compare staffing requirements to building operations staffing benchmarks
5. Upon completion of the course, the student will demonstrate a knowledge of labor contract agreements
6. Upon completion of the course, the student will demonstrate a knowledge of staffing models for building operations
7. Upon completion of the course, the student will be able to analyze staffing productivity
8. Upon completion of the course, the student will be demonstrate how to compare actual work order hours to estimated work order hours
9. Upon completion of the course, the student will be able to evaluate the quality of staff work
10. Upon completion of the course, the student will be able to compare productivity to operations plans
11. Upon completion of the course, the student will be able to analyze reasons for rework and call-backs
12. Upon completion of the course, the student will be able to analyze deferred maintenance backlogs and develop a plan to address them
13. Upon completion of the course, the student will be able to track and benchmark overtime
14. Upon completion of the course, the student will be able to supervise building staff
15. Upon completion of the course, the student will be able to delegate work to staff
16. Upon completion of the course, the student will be able to create work schedules for staff
17. Upon completion of the course, the student will be able to describe how to train facility staff
18. Upon completion of the course, the student will be able to develop staff training programs
19. Upon completion of the course, the student will be able to describe how to manage conflicts among staff
20. Upon completion of the course, the student will be able to describe methods for disciplining staff
21. Upon completion of the course, the student will be able to create staffing plans including on call and after work hours schedules
22. Upon completion of the course, the student will be able to describe methods for mentoring staff
23. Upon completion of the course, the student will be able to describe various learning styles

24. Upon completion of the course, the student will be able to demonstrate knowledge of various trade and union requirements for tradespersons
25. Upon completion of the course, the student will be able to create the request for proposals (RFPs) and scope of work (SOW)
26. Upon completion of the course, the student will be able to review a project plan and determine requirements for outside services (skills, resources, service levels, etc.)
27. Upon completion of the course, the student will be able to review a project plan and determine the type of contract that will be needed (prescriptive or performance)
28. Upon completion of the course, the student will be able to review proposals or RFP responses for a project and determine the best proposal
29. Upon completion of the course, the student will be able to develop a contractor/service provider handbook
30. Upon completion of the course, the student will be able to describe the purposes and the process for conducting orientation for service providers
31. Upon completion of the course, the student will be able to identify criteria for selection of service providers for a project
32. Upon completion of the course, the student will be able to describe how to secure the services of outside service providers (sign contracts, etc.) for a project
33. Upon completion of the course, the student will be able to demonstrate knowledge of the licensing requirements for various trades and outsourced services
34. Update procedures (SOPs, BOPs, operating plans, emergency plans, etc.)
35. Upon completion of the course, the student will be able to evaluate building use changes
36. Upon completion of the course, the student will be able to conduct gap analyses
37. Upon completion of the course, the student will be able to document procedures for building operations
38. Upon completion of the course, the student will be able to update and test new/revised procedures for building operations
39. Upon completion of the course, the student will be able to implement revised procedures for building operations
40. Upon completion of the course, the student will be able to train staff on new/revised procedures for building operations
41. Upon completion of the course, the student will be able to evaluate the success of new/revised procedures for building operations
42. Upon completion of the course, the student will be able to update emergency operating procedures
43. Upon completion of the course, the student will be able to update disaster recovery plans
44. Upon completion of the course, the student will be able to demonstrate knowledge of the National Incident Management System (NIMS)
45. Upon completion of the course, the student will be able to develop equipment operations plans
46. Upon completion of the course, the student will be able to determine required equipment start/stop times based on tenant occupancies

47. Upon completion of the course, the student will be able to extract equipment specific information from O&M manuals
48. Upon completion of the course, the student will be able to develop operation procedures (steps in operation) for specific systems and equipment
49. Upon completion of the course, the student will be able to train staff on system operations
50. Upon completion of the course, the student will be able to develop equipment operating logs
51. Upon completion of the course, the student will be able to demonstrate general knowledge of all of the different types of equipment under the responsibility of a building operations professional
52. Upon completion of the course, the student will be able to develop planned maintenance schedules
53. Upon completion of the course, the student will be able to create equipment inventories
54. Upon completion of the course, the student will be able to identify equipment specifications for equipment in a facility/building
55. Upon completion of the course, the student will be able to identify O&M requirements for equipment in a facility/building
56. Upon completion of the course, the student will be able to rank the equipment in a facility/building terms of priority for that facility/building
57. Upon completion of the course, the student will be able to determine the level of service to be performed on equipment based on criticality of the system to the facility/building
58. Upon completion of the course, the student will be able to identify equipment maintenance tasks to be outsourced to third party vendors
59. Upon completion of the course, the student will be able to identify skill level of staff for repairing and maintaining equipment in a facility/building
60. Upon completion of the course, the student will be able to identify tools required to maintain the equipment in a facility/building
61. Upon completion of the course, the student will be able to identify opportunities for predictive maintenance of equipment in a facility/building
62. Upon completion of the course, the student will be able to identify opportunities for reliability centered maintenance of equipment in a facility/building
63. Upon completion of the course, the student will be able to identify appropriate timing for maintenance (when can it be done to eliminate interference with operations) of equipment in a facility/building
64. Upon completion of the course, the student will be able to identify frequency of maintenance for equipment in a facility/building
65. Upon completion of the course, the student will be able to compare equipment needs in a facility/building to the available budget
66. Upon completion of the course, the student will be able to prioritize equipment maintenance tasks
67. Upon completion of the course, the student will be able to document equipment maintenance procedures

68. Upon completion of the course, the student will be able to create equipment maintenance programs
69. Upon completion of the course, the student will be able to document any equipment maintenance deviations from OEM standards
70. Upon completion of the course, the student will be able to plan for third party inspections/maintenance
71. Upon completion of the course, the student will be able to identify the criticality of various systems and equipment in a facility/building
72. Upon completion of the course, the student will be able to demonstrate knowledge of equipment failure modes
73. Upon completion of the course, the student will be able to describe why it is important to review construction specifications prior to construction design and bid
74. Upon completion of the course, the student will be able to compare construction designs to actual building requirements
75. Upon completion of the course, the student will be able to provide input to construction designs based on existing systems
76. Upon completion of the course, the student will be able to review submittals
77. Upon completion of the course, the student will be able to contribute to commissioning planning
78. Upon completion of the course, the student will be able to participate in commissioning
79. Upon completion of the course, the student will be able to conduct a maintainability analysis prior to construction
80. Upon completion of the course, the student will be able to conduct a surrounding site assessment
81. Upon completion of the course, the student will be able to compare various equipment and systems for equivalency/comparability
82. Upon completion of the course, the student will be able to identify when equipment substitutions are acceptable and when they are not acceptable
83. Upon completion of the course, the student will be able to analyze existing capital renewal plans
84. Upon completion of the course, the student will be able to analyze organizational strategic plans
85. Upon completion of the course, the student will be able to develop and review facility condition indexes
86. Upon completion of the course, the student will be able to advise on new conditions within the facility and property
87. Upon completion of the course, the student will be able to identify a timeline for system and equipment replacements
88. Upon completion of the course, the student will be able to promote sustainable materials and practices for renewal
89. Upon completion of the course, the student will be able to analyze ROI
90. Upon completion of the course, the student will be able to conduct a project failure analysis
91. Upon completion of the course, the student will be able to analyze system lifecycle assessments

92. Upon completion of the course, the student will be able to analyze ongoing maintenance requirements
93. Upon completion of the course, the student will be able to create a schedule for capital renewal to level capital requirements
94. Upon completion of the course, the student will be able to provide input into the facility strategic plan
95. Upon completion of the course, the student will be able to demonstrate knowledge of emerging technologies and tools that may affect facilities/buildings
96. Upon completion of the course, the student will be able to describe the expected life of major building components
97. Upon completion of the course, the student will be able to describe the impact of change on tenant/occupant space
98. Upon completion of the course, the student will be able to describe options for extending the life of equipment and systems
99. Upon completion of the course, the student will be able to develop facility/equipment/system data acquisition and management plans
100. Upon completion of the course, the student will be able to create and maintain asset inventories
101. Upon completion of the course, the student will be able to create and maintain handwritten logs
102. Upon completion of the course, the student will be able to maintain updated building as-built plans
103. Upon completion of the course, the student will be able to maintain updated OEMs
104. Upon completion of the course, the student will be able to maintain inspection records
105. Upon completion of the course, the student will be able to develop data retention policies
106. Upon completion of the course, the student will be able to determine data storage capabilities and needs
107. Upon completion of the course, the student will be able to determine offsite data storage requirements
108. Upon completion of the course, the student will be able to determine data interoperability levels
109. Upon completion of the course, the student will be able to determine data access levels
110. Upon completion of the course, the student will be able to demonstrate knowledge of basic data architecture models
111. Upon completion of the course, the student will be able to demonstrate knowledge of contingency plans for data recovery
112. Upon completion of the course, the student will be able to demonstrate knowledge of regulatory requirements for data recordkeeping
113. Upon completion of the course, the student will be able to perform a workplace hazard assessment
114. Upon completion of the course, the student will be able to conduct a building inspection
115. Upon completion of the course, the student will be able to describe the types of building inspections that should be conducted daily, monthly, and quarterly

116. Upon completion of the course, the student will be able to identify confined workspaces
117. Upon completion of the course, the student will be able to identify hazardous building components
118. Upon completion of the course, the student will be able to analyze workplace injury records
119. Upon completion of the course, the student will be able to identify workplace biohazards and chemicals
120. Upon completion of the course, the student will be able to identify building obsolescence
121. Upon completion of the course, the student will be able to create job hazard analyses reports
122. Upon completion of the course, the student will be able to identify PPE required for specific situations
123. Upon completion of the course, the student will be able to demonstrate knowledge of biohazards and hazardous chemicals
124. Upon completion of the course, the student will be able to describe what a chain of custody means
125. Upon completion of the course, the student will be able to describe the limitations of PPE
126. Upon completion of the course, the student will be able to demonstrate knowledge of safety codes and standards (including OSHA)
127. Upon completion of the course, the student will be able to describe typical safety practices
128. Upon completion of the course, the student will be able to conduct emergency drills
129. Upon completion of the course, the student will be able to manage fire drills
130. Upon completion of the course, the student will be able to manage emergency evacuation drills (earthquakes, fires, etc.)
131. Upon completion of the course, the student will be able to develop EAPs (Emergency Action Plans)
132. Upon completion of the course, the student will be able to describe how to monitor fire panels
133. Upon completion of the course, the student will be able to describe how to monitor emergency generators
134. Upon completion of the course, the student will be able to track and record building evacuation times
135. Upon completion of the course, the student will be able to create building evacuation results reports
136. Upon completion of the course, the student will be able to describe how to deal with building tenants/occupants with disabilities and needing assistance in evacuating
137. Upon completion of the course, the student will be able to develop communication protocol (ICS)
138. Upon completion of the course, the student will be able to describe best practices for emergency drills
139. Upon completion of the course, the student will be able to describe the conditions under which a building should be evacuated
140. Upon completion of the course, the student will demonstrate knowledge of emergency procedures including first aid and CPR

141. Upon completion of the course, the student will demonstrate knowledge of first response mitigation techniques such as fire extinguishers
142. Upon completion of the course, the student will demonstrate knowledge of incident command systems (ICS) and national incident management systems (NIMS)
143. Upon completion of the course, the student will demonstrate knowledge of typical evacuation procedures for various occupancy types
144. Upon completion of the course, the student will demonstrate knowledge of specialized emergency equipment
145. Upon completion of the course, the student will be able to manage a PPE program
146. Upon completion of the course, the student will be able to identify hazards in a facility/building
147. Upon completion of the course, the student will be able to train staff on hazards and PPE requirements
148. Upon completion of the course, the student will be able to train staff on limitations of PPE
149. Upon completion of the course, the student will be able to identify how to label hazards and rooms with hazards
150. Upon completion of the course, the student will be able to test staff on use of PPE for correct usage
151. Upon completion of the course, the student will be able to set up medical evaluations for some PPE (Respirators, etc.)
152. Upon completion of the course, the student will be able to conduct a fit test of PPE
153. Upon completion of the course, the student will be able to describe how to document training on PPE
154. Upon completion of the course, the student will be able to describe how to document use compliance for PPE
155. Upon completion of the course, the student will be able to describe how to document PPE testing
156. Upon completion of the course, the student will be able to describe how to procure required PPE
157. Upon completion of the course, the student will be able to conduct audiometric testing (loudness)
158. Upon completion of the course, the student will be able to describe how to enforce use of PPE
159. Upon completion of the course, the student will be able to certify the PPE equipment on an annual basis
160. Upon completion of the course, the student will be able to document a PPE program
161. Upon completion of the course, the student will demonstrate knowledge of decontamination requirements
162. Upon completion of the course, the student will demonstrate knowledge of hazards management
163. Upon completion of the course, the student will demonstrate knowledge of HIPAA requirements
164. Upon completion of the course, the student will demonstrate knowledge of proper procedures for isolating and removing hazards

165. Upon completion of the course, the student will demonstrate knowledge of proper usage of PPE
166. Upon completion of the course, the student will demonstrate knowledge of proper maintenance of PPE
167. Upon completion of the course, the student will be able to determine types of inspections needed in a given facility/building
168. Upon completion of the course, the student will be able to describe how to schedule third party inspections
169. Upon completion of the course, the student will be able to prepare equipment for inspections (shut down, etc.)
170. Upon completion of the course, the student will be able to operate equipment for inspections (elevator recall, etc.)
171. Upon completion of the course, the student will be able to describe ways to participate in inspections (escort the inspector, etc.)
172. Upon completion of the course, the student will be able to describe how to schedule inspections with internal staff affected
173. Upon completion of the course, the student will be able to verify safety for inspectors (hazards, etc.)
174. Upon completion of the course, the student will be able to describe how to communicate with building tenants regarding inspection requirements
175. Upon completion of the course, the student will be able to describe how to communicate results with parties
176. Upon completion of the course, the student will be able to analyze the results of inspections
177. Upon completion of the course, the student will be able to address deficiencies identified during inspections
178. Upon completion of the course, the student will be able to coordinate re-inspections
179. Upon completion of the course, the student will demonstrate knowledge of typical authorizes having jurisdiction
180. Upon completion of the course, the student will demonstrate knowledge of inspection agencies
181. Upon completion of the course, the student will demonstrate knowledge of inspection procedures
182. Upon completion of the course, the student will demonstrate knowledge of the operational impact of inspections
183. Upon completion of the course, the student will be able to identify emergencies
184. Upon completion of the course, the student will be able to initiate emergency procedures
185. Upon completion of the course, the student will be able to describe how to communicate emergency information with internal stakeholders and staff
186. Upon completion of the course, the student will be able to describe how to secure impacted equipment and/or affected areas during an emergency
187. Upon completion of the course, the student will be able to respond to emergencies with no established procedures by isolating and mitigating the emergency

188. Upon completion of the course, the student will be able to describe how to escalate for additional emergency support during an emergency
189. Upon completion of the course, the student will be able to describe how to communicate with external stakeholders
190. Upon completion of the course, the student will be able to describe how to clean up after emergencies
191. Upon completion of the course, the student will be able to conduct "lessons learned" activities after an emergency
192. Upon completion of the course, the student will be able to document emergencies
193. Upon completion of the course, the student will be able to restock emergency supplies
194. Upon completion of the course, the student will be able to make emergency/temporary repairs to stabilize problems
195. Upon completion of the course, the student will be able to make permanent repairs after an emergency
196. Upon completion of the course, the student will be able to conduct root cause analyses of an emergency
197. Upon completion of the course, the student will be able to coordinate outside special services during an emergency
198. Upon completion of the course, the student will be able to describe how to plan for/accommodate non-English speaking building tenants/occupants and staff during an emergency
199. Upon completion of the course, the student will demonstrate knowledge of hazard remediation and clean up
200. Upon completion of the course, the student will demonstrate knowledge of hazardous materials disposal
201. Upon completion of the course, the student will demonstrate knowledge of potential environmental health and safety (EHS) hazards and risks
202. Upon completion of the course, the student will demonstrate knowledge of reporting requirements for emergencies
203. Upon completion of the course, the student will demonstrate knowledge of uninterruptable and critical systems during an emergency
204. Upon completion of the course, the student will be able to describe how to update access requirements or permissions
205. Upon completion of the course, the student will be able to describe methods for issuing access cards and keys
206. Upon completion of the course, the student will be able to verify security of access (door locks, self closing door operation, etc.)
207. Upon completion of the course, the student will be able to describe how to maintain chain of custody of access cards and keys
208. Upon completion of the course, the student will be able to maintain security lighting (exterior lights, etc.)

- 209. Upon completion of the course, the student will be able to maintain security equipment (camera system, etc.)
- 210. Upon completion of the course, the student will be able to maintain key logic system and distribution
- 211. Upon completion of the course, the student will be able to develop policies for temporary access for outside vendors
- 212. Upon completion of the course, the student will be able to maintain egress/access documentation (doors and window counts)
- 213. Upon completion of the course, the student will be able to perform security functions (monitor for potential unauthorized access)
- 214. Upon completion of the course, the student will be able to respond to unauthorized access
- 215. Upon completion of the course, the student will be able to complete certificates and compliance forms regarding access
- 216. Upon completion of the course, the student will be able to maintain access (rekey locks, cut new keys, etc.)
- 217. Upon completion of the course, the student will be able to maintain security and access records (video, written logs, etc.)
- 218. Upon completion of the course, the student will demonstrate knowledge of key logic systems
- 219. Upon completion of the course, the student will demonstrate knowledge of different types of security requirements (access requirements, levels of security, etc.)
- 220. Upon completion of the course, the student will demonstrate knowledge of various security equipment (lighting, cameras, etc.)
- 221. Upon completion of the course, the student will demonstrate knowledge of typical security policies and procedures
- 222. Upon completion of the course, the student will be able to identify training topics for tenant/occupant training
- 223. Upon completion of the course, the student will be able to identify knowledge levels of tenants/occupants
- 224. Upon completion of the course, the student will be able to develop and update tenant/occupant training programs
- 225. Upon completion of the course, the student will be able to schedule and conduct tenant/occupant training
- 226. Upon completion of the course, the student will be able to identify appropriate personnel for tenant/occupant training
- 227. Upon completion of the course, the student will be able to coordinate training with tenant/occupant management
- 228. Upon completion of the course, the student will be able to document completed tenant/occupant training
- 229. Upon completion of the course, the student will be able to evaluate the success of tenant/occupant training

- 230. Upon completion of the course, the student will demonstrate knowledge of change management techniques
- 231. Upon completion of the course, the student will be able to conduct risk management activities
- 232. Upon completion of the course, the student will be able to define risks associated with building operations
- 233. Upon completion of the course, the student will be able to assess risks associated with building operations
- 234. Upon completion of the course, the student will be able to participate in the development of a hazard vulnerability analysis
- 235. Upon completion of the course, the student will be able to manage utility system risk and vulnerability
- 236. Upon completion of the course, the student will be able to examine interoperability of systems
- 237. Upon completion of the course, the student will be able to develop action plans for hazard risks
- 238. Upon completion of the course, the student will be able to identify external resources required for risk management
- 239. Upon completion of the course, the student will be able to coordinate management of external resources required for risk management
- 240. Upon completion of the course, the student will be able to review hazard vulnerability analyses and update them as required
- 241. Upon completion of the course, the student will demonstrate basic knowledge of insurance policies for equipment and operations
- 242. Upon completion of the course, the student will demonstrate knowledge of root cause analysis methods and techniques
- 243. Upon completion of the course, the student will be able to manage responses to inclement weather conditions/issues
- 244. Upon completion of the course, the student will be able to create inclement weather action plans
- 245. Upon completion of the course, the student will be able to identify areas that are vulnerable to inclement weather
- 246. Upon completion of the course, the student will be able to redirect resources during inclement weather situations
- 247. Upon completion of the course, the student will be able to prepare and stock for inclement weather incidents
- 248. Upon completion of the course, the student will be able to restock following inclement weather incidents
- 249. Upon completion of the course, the student will be able to maintain inclement weather response resources
- 250. Upon completion of the course, the student will be able to plan for processes/services that cannot be disrupted during inclement weather situations
- 251. Upon completion of the course, the student will be able to communicate inclement weather activities with tenants/occupants and stakeholders

- 252. Upon completion of the course, the student will be able to manage and schedule staff to address inclement weather conditions/issues
- 253. Upon completion of the course, the student will be able to train staff on the inclement weather action plans
- 254. Upon completion of the course, the student will be able to monitor inclement weather forecasts
- 255. Upon completion of the course, the student will be able to identify the core issues of tenant/occupant requests
- 256. Upon completion of the course, the student will be able to describe how to document tenant/occupant issues or requests
- 257. Upon completion of the course, the student will be able to prioritize responses to tenant/occupant requests
- 258. Upon completion of the course, the student will be able to identify appropriate staff to address tenant/occupant issues
- 259. Upon completion of the course, the student will be able to describe how to communicate actions throughout the response to tenant/occupant requests
- 260. Upon completion of the course, the student will be able to describe typical lead-times for responses to tenant/occupant requests
- 261. Upon completion of the course, the student will be able to describe how to manage tenant/occupant expectations
- 262. Upon completion of the course, the student will be able to document resolution of responses to tenant/occupant requests and issues
- 263. Upon completion of the course, the student will be able to track resources required for responses to tenant/occupant requests and issues
- 264. Upon completion of the course, the student will be able to review prior tenant/occupant requests (trend analysis, historical data)
- 265. Upon completion of the course, the student will be able to identify opportunities for improvement
- 266. Upon completion of the course, the student will be able to identify PPE need for responses to tenant/occupant requests and issues
- 267. Upon completion of the course, the student will be able to conduct equipment checks
- 268. Upon completion of the course, the student will be able to identify facility/building equipment/systems that require daily checks
- 269. Upon completion of the course, the student will be able to describe how to record equipment check readings
- 270. Upon completion of the course, the student will be able to collect equipment operating data
- 271. Upon completion of the course, the student will be able to respond to equipment anomalies
- 272. Upon completion of the course, the student will be able to conduct necessary equipment tests
- 273. Upon completion of the course, the student will be able to determine frequency for equipment checks
- 274. Upon completion of the course, the student will be able to adjust equipment based on readings

- 275. Upon completion of the course, the student will demonstrate knowledge of how to interpret equipment test readings
- 276. Upon completion of the course, the student will demonstrate knowledge of normal equipment operating parameters and limits
- 277. Upon completion of the course, the student will be able to describe how to conduct daily rounds
- 278. Upon completion of the course, the student will be able to describe how to physically tour facilities
- 279. Upon completion of the course, the student will be able to identify areas requiring efficiency upgrades or needing improvements
- 280. Upon completion of the course, the student will be able to identify energy conservation opportunities (lights on in unoccupied areas, ventilation issues, HOA switches, etc.)
- 281. Upon completion of the course, the student will be able to observe for other indicators of issues (odd smells, etc.)
- 282. Upon completion of the course, the student will be able to check remote and other automated monitoring systems
- 283. Upon completion of the course, the student will be able to check for common or known issues
- 284. Upon completion of the course, the student will be able to describe how to document deficiencies noted
- 285. Upon completion of the course, the student will demonstrate knowledge of common or frequent deficiencies found during daily rounds
- 286. Upon completion of the course, the student will demonstrate knowledge of the sequence of systems
- 287. Upon completion of the course, the student will be able to coordinate normal facility operations
- 288. Upon completion of the course, the student will be able to verify occupied, unoccupied and standby schedules
- 289. Upon completion of the course, the student will be able to compile equipment schedules
- 290. Upon completion of the course, the student will be able to validate equipment availability
- 291. Upon completion of the course, the student will be able to optimize equipment start ups
- 292. Upon completion of the course, the student will be able to obtain peak demand loads
- 293. Upon completion of the course, the student will be able to start equipment
- 294. Upon completion of the course, the student will be able to stop equipment
- 295. Upon completion of the course, the student will be able to verify equipment is operating within normal seasonal parameters
- 296. Upon completion of the course, the student will be able to verify systems availability
- 297. Upon completion of the course, the student will be able to evaluate alternative scheduling needs (holidays, inclement weather, etc.)
- 298. Upon completion of the course, the student will be able to document building operations
- 299. Upon completion of the course, the student will be able to operate renewable technologies (solar, wind, energy storage systems, distributed generation, water recovery systems, etc.)
- 300. Upon completion of the course, the student will be able to maintain the BAS system
- 301. Upon completion of the course, the student will be able to maintain the BAS system database

- 302. Upon completion of the course, the student will be able to complete activity reports
- 303. Upon completion of the course, the student will demonstrate knowledge of peak demand loads
- 304. Upon completion of the course, the student will demonstrate knowledge of interlocked equipment
- 305. Upon completion of the course, the student will demonstrate knowledge of weather related factors affecting equipment (temperatures, dew points, etc.)
- 306. Upon completion of the course, the student will be able to coordinate non-normal facility operations
- 307. Upon completion of the course, the student will be able to perform equipment shut downs for maintenances
- 308. Upon completion of the course, the student will be able to perform equipment load shedding
- 309. Upon completion of the course, the student will be able to perform equipment lock-out/tag-out
- 310. Upon completion of the course, the student will be able to shut down equipment for smoke control
- 311. Upon completion of the course, the student will be able to schedule and notify tenants/occupants of shut downs
- 312. Upon completion of the course, the student will be able to adjust to utility shut downs
- 313. Upon completion of the course, the student will be able to verify equipment is ready for normal operations
- 314. Upon completion of the course, the student will be able to return equipment to normal operations
- 315. Upon completion of the course, the student will be able to document building operations
- 316. Upon completion of the course, the student will demonstrate knowledge of lock-out/tag-outs
- 317. Upon completion of the course, the student will demonstrate knowledge of remote system fluency (DDC, etc.)
- 318. Upon completion of the course, the student will demonstrate knowledge of load shedding
- 319. Upon completion of the course, the student will be able to manage the work order process
- 320. Upon completion of the course, the student will be able to build and maintain an asset inventory
- 321. Upon completion of the course, the student will be able to establish work order priorities
- 322. Upon completion of the course, the student will be able to establish work order response times
- 323. Upon completion of the course, the student will be able to identify the status of work orders
- 324. Upon completion of the course, the student will be able to document activities associated with work orders (including completion verification)
- 325. Upon completion of the course, the student will be able to identify responsible party for work orders
- 326. Upon completion of the course, the student will be able to track labor hours for work orders
- 327. Upon completion of the course, the student will be able to assign nominal values to work orders
- 328. Upon completion of the course, the student will be able to identify if work orders are recoverable (charge back, etc.)

- 329. Upon completion of the course, the student will be able to track resolution of the work order foundation problem
- 330. Upon completion of the course, the student will be able to verify the quality of work associated with work orders
- 331. Upon completion of the course, the student will be able to evaluate the efficiency of the work order process
- 332. Upon completion of the course, the student will be able to train tenants/occupants regarding work order processes
- 333. Upon completion of the course, the student will be able to track and compile feedback on work order outcomes
- 334. Upon completion of the course, the student will demonstrate knowledge of asset inventories
- 335. Upon completion of the course, the student will demonstrate knowledge of work order processes
- 336. Upon completion of the course, the student will be able to investigate indoor environmental quality
- 337. Upon completion of the course, the student will be able to monitor remote monitoring systems
- 338. Upon completion of the course, the student will be able to conduct indoor air quality checks
- 339. Upon completion of the course, the student will be able to address drafts
- 340. Upon completion of the course, the student will be able to investigate CO₂ alarms
- 341. Upon completion of the course, the student will be able to survey tenants/occupants about indoor environmental quality
- 342. Upon completion of the course, the student will be able to identify chemicals in the workplace
- 343. Upon completion of the course, the student will be able to investigate indoor air quality issues
- 344. Upon completion of the course, the student will be able to investigate CO alarms
- 345. Upon completion of the course, the student will be able to conduct random testing to verify building automation systems
- 346. Upon completion of the course, the student will be able to describe how to control chemicals brought into the workplace
- 347. Upon completion of the course, the student will be able to verify air exchange (fresh air, exhaust fans) meets requirements
- 348. Upon completion of the course, the student will be able to investigate and respond to moisture issues
- 349. Upon completion of the course, the student will be able to investigate gas smells (sewers, etc.)
- 350. Upon completion of the course, the student will be able to describe protocols for IAQ testing (mold, etc.)
- 351. Upon completion of the course, the student will be able to describe how to promote the use of low VOC paints
- 352. Upon completion of the course, the student will be able to schedule construction remodeling work
- 353. Upon completion of the course, the student will be able to manage ACM programs
- 354. Upon completion of the course, the student will be able to manage PACM programs

- 355. Upon completion of the course, the student will be able to develop IEQ plans
- 356. Upon completion of the course, the student will demonstrate knowledge of when to conduct IEQ tests
- 357. Upon completion of the course, the student will demonstrate knowledge of contaminant containment protocols
- 358. Upon completion of the course, the student will demonstrate knowledge of health effects of contaminants (including stay times)
- 359. Upon completion of the course, the student will be able to describe how to manage tenant/occupant expectations
- 360. Upon completion of the course, the student will be able to train tenants/occupants in efficiency measures and protocols
- 361. Upon completion of the course, the student will be able to describe how to introduce new initiatives
- 362. Upon completion of the course, the student will be able to solicit tenant/occupant feedback and initiatives
- 363. Upon completion of the course, the student will be able to communicate and manage about tenant/occupant equipment (space heaters, etc.)
- 364. Upon completion of the course, the student will be able to manage consumables
- 365. Upon completion of the course, the student will be able to maintain consumable inventories
- 366. Upon completion of the course, the student will be able to track consumable usage
- 367. Upon completion of the course, the student will be able to establish restock levels
- 368. Upon completion of the course, the student will be able to conduct inventory control activities (fuel, parts, chemicals, etc.)
- 369. Upon completion of the course, the student will be able to identify vendors for consumables
- 370. Upon completion of the course, the student will be able to identify vendors using sustainable supplies
- 371. Upon completion of the course, the student will be able to procure consumables in accordance with purchasing policy
- 372. Upon completion of the course, the student will be able to manage recyclables
- 373. Upon completion of the course, the student will be able to dispose of regulated consumables (batteries, paint, computers, etc.)
- 374. Upon completion of the course, the student will be able to manage chain of custody on disposal of regulated consumables (batteries, paint, computers, etc.)
- 375. Upon completion of the course, the student will be able to schedule consumable deliveries
- 376. Upon completion of the course, the student will be able to store consumables
- 377. Upon completion of the course, the student will demonstrate knowledge of consumable logistics, sourcing guidelines, shelf life, storage requirements, and inventory control systems
- 378. Upon completion of the course, the student will be able to manage outside facility contractors/service providers
- 379. Upon completion of the course, the student will be able to verify contractor/service providers licenses

- 380. Upon completion of the course, the student will be able to verify contractor/service providers permits
- 381. Upon completion of the course, the student will be able to verify contractor/service providers insurance
- 382. Upon completion of the course, the student will be able to verify contractor/service providers compliance with company policies and contract documents
- 383. Upon completion of the course, the student will be able to verify contractor/service providers compliance with local codes
- 384. Upon completion of the course, the student will be able to distribute facility rules and regulations to contractor/service providers
- 385. Upon completion of the course, the student will be able to ensure training is provided to contractor/service providers
- 386. Upon completion of the course, the student will be able to enforce facility rules and regulations with contractor/service providers
- 387. Upon completion of the course, the student will be able to analyze contractor/service providers work
- 388. Upon completion of the course, the student will be able to verify contractor/service providers PPE
- 389. Upon completion of the course, the student will be able to identify and communicate environmental hazards to contractor/service providers
- 390. Upon completion of the course, the student will be able to validate contractor/service providers work has been completed prior to payment (progress billing)
- 391. Upon completion of the course, the student will be able to describe how to obtain lien waivers
- 392. Upon completion of the course, the student will be able to obtain close-out documents (submittals, as-builts, etc.) or ongoing service documents
- 393. Upon completion of the course, the student will be able to provide access to contractors/service providers
- 394. Upon completion of the course, the student will be able to check providers actual performance against contracted service at periodic intervals
- 395. Upon completion of the course, the student will be able to provide site specific orientation to contractors/service providers
- 396. Upon completion of the course, the student will demonstrate knowledge of contract requirements associated with outsourced service providers
- 397. Upon completion of the course, the student will demonstrate knowledge of licensing requirements associated with outsourced service providers
- 398. Upon completion of the course, the student will demonstrate knowledge of insurance requirements associated with outsourced service providers
- 399. Upon completion of the course, the student will demonstrate knowledge of permitting requirements associated with outsourced service providers
- 400. Upon completion of the course, the student will be able to identify permit parameters for systems (refrigerant logs, etc.)

- 401. Upon completion of the course, the student will be able to measure and record parameters for systems
- 402. Upon completion of the course, the student will be able to report parameters for systems
- 403. Upon completion of the course, the student will be able to manage readings outside of permit parameters
- 404. Upon completion of the course, the student will be able to coordinate outside resources and services
- 405. Upon completion of the course, the student will be able to coordinate reclamation processes
- 406. Upon completion of the course, the student will be able to identify appropriate permits required
- 407. Upon completion of the course, the student will demonstrate knowledge of reclamation techniques
- 408. Upon completion of the course, the student will demonstrate knowledge of refrigerant recovery techniques
- 409. Upon completion of the course, the student will be able to implement an energy management program
- 410. Upon completion of the course, the student will be able to assist in the development of energy management programs
- 411. Upon completion of the course, the student will be able to assist in the development of strategic energy plans
- 412. Upon completion of the course, the student will be able to create energy baselines
- 413. Upon completion of the course, the student will be able to set goals for energy improvement in a facility/building
- 414. Upon completion of the course, the student will be able to maintain energy-related operating improvements in a facility/building
- 415. Upon completion of the course, the student will be able to implement recommissioning or ongoing commissioning energy programs
- 416. Upon completion of the course, the student will be able to determine targets for energy reductions
- 417. Upon completion of the course, the student will be able to develop opportunities for energy improvement initiatives in a facility/building
- 418. Upon completion of the course, the student will be able to obtain buy-in from building tenants/occupants regarding energy management programs
- 419. Upon completion of the course, the student will be able to support outreach and marketing activities for energy management programs
- 420. Upon completion of the course, the student will be able to evaluate utility bills
- 421. Upon completion of the course, the student will be able to investigate opportunities for rebates
- 422. Upon completion of the course, the student will be able to identify code requirements for energy management programs
- 423. Upon completion of the course, the student will be able to document results of energy management programs

- 424. Upon completion of the course, the student will be able to measure and verify savings of energy management programs
- 425. Upon completion of the course, the student will be able to identify KPIs for energy management programs
- 426. Upon completion of the course, the student will demonstrate knowledge of break-even analyses
- 427. Upon completion of the course, the student will demonstrate knowledge of energy conservation opportunities
- 428. Upon completion of the course, the student will demonstrate knowledge of life cycle costs associated with energy management programs
- 429. Upon completion of the course, the student will demonstrate knowledge of life cycle accounting practices
- 430. Upon completion of the course, the student will describe how to conduct a utility bill analysis
- 431. Upon completion of the course, the student will be able to maintain the facility and systems
- 432. Upon completion of the course, the student will be able to perform emergency maintenance
- 433. Upon completion of the course, the student will be able to perform preventive/predictive maintenance
- 434. Upon completion of the course, the student will be able to perform scheduled maintenance
- 435. Upon completion of the course, the student will be able to ensure maintenance of life safety systems
- 436. Upon completion of the course, the student will be able to test emergency power systems
- 437. Upon completion of the course, the student will be able to maintain water/wastewater systems
- 438. Upon completion of the course, the student will be able to maintain plumbing systems
- 439. Upon completion of the course, the student will be able to maintain irrigation systems
- 440. Upon completion of the course, the student will be able to ensure maintenance of security systems
- 441. Upon completion of the course, the student will be able to maintain the building envelope
- 442. Upon completion of the course, the student will be able to ensure maintenance of electrical systems
- 443. Upon completion of the course, the student will be able to maintain lighting systems
- 444. Upon completion of the course, the student will be able to maintain mechanical systems
- 445. Upon completion of the course, the student will be able to maintain other non-facility equipment (food service, laundry, etc.)
- 446. Upon completion of the course, the student will be able to ensure maintenance of elevator/escalator and other conveyance systems
- 447. Upon completion of the course, the student will be able to maintain access systems (locks, keys, etc.)
- 448. Upon completion of the course, the student will be able to ensure maintenance of communications systems
- 449. Upon completion of the course, the student will be able to inspect structural systems
- 450. Upon completion of the course, the student will be able to ensure maintenance of medical and laboratory gas systems

- 451. Upon completion of the course, the student will be able to maintain wall systems and finishes (paint, drywall, picture frames, etc.)
- 452. Upon completion of the course, the student will be able to ensure maintenance of firewall penetration integrity
- 453. Upon completion of the course, the student will be able to oversee the cleanliness of the facility
- 454. Upon completion of the course, the student will be able to oversee building improvements
- 455. Upon completion of the course, the student will be able to oversee tenant/occupant improvements
- 456. Upon completion of the course, the student will be able to oversee storm drainage system maintenance
- 457. Upon completion of the course, the student will be able to oversee landscaping maintenance
- 458. Upon completion of the course, the student will be able to manage pest management operations
- 459. Upon completion of the course, the student will be able to ensure maintenance of air compressor and compressed air systems
- 460. Upon completion of the course, the student will be able to ensure the maintenance of HVACR systems
- 461. Upon completion of the course, the student will be able to ensure maintenance of building control systems (BAS, DDC, EMS, BMS, pneumatics, etc.)
- 462. Upon completion of the course, the student will be able to ensure maintenance of hot water and steam systems
- 463. Upon completion of the course, the student will be able to maintain utility submetering systems
- 464. Upon completion of the course, the student will be able to maintain the onsite power generation systems
- 465. Upon completion of the course, the student will be able to maintain the primary sewage and gray water systems
- 466. Upon completion of the course, the student will be able to maintain other facility use systems (operational systems such as package tracking, etc.)
- 467. Upon completion of the course, the student will be able to conduct facility repair activities
- 468. Upon completion of the course, the student will be able to ensure fire and life safety systems are monitored throughout the repair
- 469. Upon completion of the course, the student will be able to describe what is required to comply with safety regulations
- 470. Upon completion of the course, the student will be able to make improvements and repairs to comply with ADA
- 471. Upon completion of the course, the student will be able to troubleshoot systems
- 472. Upon completion of the course, the student will be able to identify and manage needed repairs
- 473. Upon completion of the course, the student will be able to identify repair options or alternatives
- 474. Upon completion of the course, the student will be able to describe how to comply with infection control risk assessments

- 475. Upon completion of the course, the student will be able to identify environmental issues (asbestos, VAT, ACMs, lead paint, etc.)
- 476. Upon completion of the course, the student will be able to identify equipment/source suppliers
- 477. Upon completion of the course, the student will be able to order repair parts
- 478. Upon completion of the course, the student will be able to coordinate permitting
- 479. Upon completion of the course, the student will be able to describe how to ensure business continuity
- 480. Upon completion of the course, the student will be able to identify sustainable materials (low VOC, etc.)
- 481. Upon completion of the course, the student will be able to conduct repair verification and follow-up activities
- 482. Upon completion of the course, the student will be able to dispose of waste
- 483. Upon completion of the course, the student will be able to conduct measurement and verification activities
- 484. Upon completion of the course, the student will demonstrate knowledge of EPA regulations
- 485. Upon completion of the course, the student will be able to obtain equipment and system performance baselines
- 486. Upon completion of the course, the student will be able to identify expectations from basis of design
- 487. Upon completion of the course, the student will be able to obtain measurements validating performance against basis of design
- 488. Upon completion of the course, the student will be able to obtain M&V plan
- 489. Upon completion of the course, the student will demonstrate knowledge of BAS or monitoring systems
- 490. Upon completion of the course, the student will demonstrate knowledge of trend analysis techniques
- 491. Upon completion of the course, the student will be able to conduct an energy audit (ASHRAE Level 1 or 2)
- 492. Upon completion of the course, the student will be able to establish system performance baselines
- 493. Upon completion of the course, the student will be able to gather information regarding system performance
- 494. Upon completion of the course, the student will be able to determine if a facility is being used the way the system was designed for it to be used
- 495. Upon completion of the course, the student will be able to determine if adequate monitoring equipment exists
- 496. Upon completion of the course, the student will be able to compare baselines to measured information
- 497. Upon completion of the course, the student will be able to verify a facility's needs are being met
- 498. Upon completion of the course, the student will be able to validate a facility's sequence of operations

- 499. Upon completion of the course, the student will be able to select appropriate measuring equipment
- 500. Upon completion of the course, the student will be able to obtain key measurements
- 501. Upon completion of the course, the student will be able to estimate changing use and/or loads
- 502. Upon completion of the course, the student will be able to identify non-performers (systems that are not performing)
- 503. Upon completion of the course, the student will be able to compare system performance to internal and external benchmarks
- 504. Upon completion of the course, the student will be able to identify equipment or system upgrade opportunities
- 505. Upon completion of the course, the student will be able to develop a facility/equipment/system digital data acquisition plan
- 506. Upon completion of the course, the student will be able to identify cost saving measures
- 507. Upon completion of the course, the student will be able to select cost saving equipment (operations)
- 508. Upon completion of the course, the student will be able to compare old equipment to new technologies
- 509. Upon completion of the course, the student will be able to calculate total cost of ownership of equipment (capital costs, ownership costs, maintenance costs, etc.)
- 510. Upon completion of the course, the student will be able to identify recoverable costs
- 511. Upon completion of the course, the student will be able to identify rebates and incentives
- 512. Upon completion of the course, the student will be able to develop a business case for upgrade measures
- 513. Upon completion of the course, the student will be able to set a schedule for implementation of cost savings measures
- 514. Upon completion of the course, the student will be able to identify negative impacts of change
- 515. Upon completion of the course, the student will be able to respond to changing energy costs
- 516. Upon completion of the course, the student will be able to analyze utility costs
- 517. Upon completion of the course, the student will be able to manage utility interval data (i.e. hourly consumption top establish use patterns)
- 518. Upon completion of the course, the student will be able to develop contingency plans for energy reduction
- 519. Upon completion of the course, the student will be able to implement demand management programs
- 520. Upon completion of the course, the student will be able to perform meter analysis
- 521. Upon completion of the course, the student will demonstrate knowledge of energy demand management strategies
- 522. Upon completion of the course, the student will demonstrate knowledge of load demand schedules
- 523. Upon completion of the course, the student will be able to optimize system performance
- 524. Upon completion of the course, the student will be able to verify the optimal stop/start routine

- 525. Upon completion of the course, the student will be able to implement reset schedules (hot and cold water systems, static pressure, discharge temperature, etc.)
- 526. Upon completion of the course, the student will be able to implement demand control strategies
- 527. Upon completion of the course, the student will be able to verify existing sensors and add new as needed
- 528. Upon completion of the course, the student will be able to research demand control ventilation
- 529. Upon completion of the course, the student will be able to verify critical tenant/occupant schedules and reduce where possible
- 530. Upon completion of the course, the student will be able to optimize pressure, flow and temperatures in all central systems
- 531. Upon completion of the course, the student will be able to verify costs savings and optimization
- 532. Upon completion of the course, the student will be able to adjust set point to eliminate simultaneous heating and cooling
- 533. Upon completion of the course, the student will be able to ensure all capacity controls are operational
- 534. Upon completion of the course, the student will be able to compare air balance to baseline
- 535. Upon completion of the course, the student will be able to manage seasonal use of equipment
- 536. Upon completion of the course, the student will be able to maintain integration of access with user systems
- 537. Upon completion of the course, the student will be able to contribute to the development of the energy management program
- 538. Upon completion of the course, the student will demonstrate knowledge of control theory
- 539. Upon completion of the course, the student will demonstrate knowledge of energy load profiles
- 540. Upon completion of the course, the student will demonstrate knowledge of fluid dynamics
- 541. Upon completion of the course, the student will demonstrate knowledge of heat transfer
- 542. Upon completion of the course, the student will demonstrate knowledge of psychrometrics
- 543. Upon completion of the course, the student will demonstrate knowledge of thermodynamics
- 544. Upon completion of the course, the student will be able to identify sustainability opportunities
- 545. Upon completion of the course, the student will demonstrate knowledge of waste management programs
- 546. Upon completion of the course, the student will demonstrate knowledge of water conservation programs
- 547. Upon completion of the course, the student will demonstrate knowledge of sustainable procurement programs
- 548. Upon completion of the course, the student will demonstrate knowledge of integrated pest management programs
- 549. Upon completion of the course, the student will demonstrate knowledge of green cleaning programs
- 550. Upon completion of the course, the student will demonstrate knowledge of recycling programs

- 551. Upon completion of the course, the student will be able to implement refrigerant management programs (reduction in CFCs etc.)
- 552. Upon completion of the course, the student will be able to identify alternative sustainable systems
- 553. Upon completion of the course, the student will be able to contribute to business case for alternatives
- 554. Upon completion of the course, the student will demonstrate knowledge of "green teams" with facility tenants/occupants
- 555. Upon completion of the course, the student will be able to conduct gap analysis to identify sustainability options
- 556. Upon completion of the course, the student will demonstrate knowledge of heat island reduction (roof and non-roof)
- 557. Upon completion of the course, the student will demonstrate knowledge of foot-candles/lumens and lighting concepts
- 558. Upon completion of the course, the student will demonstrate knowledge of local water requirements and restrictions
- 559. Upon completion of the course, the student will demonstrate knowledge of photometric charts
- 560. Upon completion of the course, the student will be able to contribute to long term facility budgets plan (5 years)
- 561. Upon completion of the course, the student will be able to review long term/strategic facility plans
- 562. Upon completion of the course, the student will be able to provide recommendations on repairs or replacements
- 563. Upon completion of the course, the student will be able to list out deferred maintenances
- 564. Upon completion of the course, the student will be able to conduct feasibility studies
- 565. Upon completion of the course, the student will be able to create "wish list" of items to be repaired/replaced
- 566. Upon completion of the course, the student will be able to conduct life cycle assessments
- 567. Upon completion of the course, the student will be able to forecast staffing, utilities, and other contributory costs
- 568. Upon completion of the course, the student will be able to review previous budgets and performance against budgets
- 569. Upon completion of the course, the student will be able to identify future changes in operations or occupancy usage projections
- 570. Upon completion of the course, the student will be able to benchmark operations budgets (RS means)
- 571. Upon completion of the course, the student will be able to evaluate equipment and potential failures
- 572. Upon completion of the course, the student will be able to identify contractors/service providers requirements

- 573. Upon completion of the course, the student will be able to identify staffing requirements for future service activities
- 574. Upon completion of the course, the student will be able to identify special maintenance needs
- 575. Upon completion of the course, the student will be able to identify potential code changes affecting operations
- 576. Upon completion of the course, the student will be able to review maintenance backlog and deferred activities
- 577. Upon completion of the course, the student will be able to identify rate increases
- 578. Upon completion of the course, the student will be able to review non-normal operating categories (snow removal, etc.)
- 579. Upon completion of the course, the student will be able to manage actual expenditures to budgets
- 580. Upon completion of the course, the student will be able to contribute to capital improvement budget(s)
- 581. Upon completion of the course, the student will be able to review expected life of systems and facilities
- 582. Upon completion of the course, the student will be able to review previous budgets
- 583. Upon completion of the course, the student will be able to identify future changes in operations or occupancy usage projections
- 584. Upon completion of the course, the student will be able to evaluate equipment and potential failures
- 585. Upon completion of the course, the student will be able to identify special maintenance needs
- 586. Upon completion of the course, the student will be able to identify potential code changes affecting operations
- 587. Upon completion of the course, the student will be able to review maintenance backlog and deferred activities
- 588. Upon completion of the course, the student will be able to review contingencies
- 589. Upon completion of the course, the student will be able to provide input into the development of the capital improvement budget
- 590. Upon completion of the course, the student will be able to manage actual expenditures to budgets