MEG 0100. Direct Digital Controls and Energy Management System. 3 Hours.
Examines state-of-the-art HVAC computerized controls. Emphasizes available system configurations, applications, feasibility determination, and avoiding common system problems. Topics include automatic controls, energy management systems, and data communications.

MEG 0110. The ADA and the Massachusetts Architectural Access Board Requirements. 0.7 Hours.
Examines scoping and technical requirements, alteration formulas, additions, site access, vertical access, toilet rooms, dormitories, signage, recreation areas, and assembly areas. Discusses common errors and omissions and offers participation in an access survey. Covers Section 504 of the Rehabilitation Act and the federal Fair Housing Act design and construction requirements. Offers the successful student an opportunity to feel comfortable using the ADA Standards for Accessible Design and the Rules and Regulations of the AAB (521 CMR).

MEG 0168. Fundamentals of Engineering (FE) License Examination. 2.5 Hours.
Offers students an opportunity to prepare for the Fundamentals of Engineering (FE) License Examination. Reviews engineering fundamentals in addition to the important concepts common to all engineering specialties. Reviews sample problems in class. The course concludes several weeks prior to the date of the examination.

MEG 0170. Professional Engineering Review: Mechanical. 3.2 Hours.
Offers students an opportunity to prepare for the Principles and Practice (PE) License Examination in Mechanical Engineering. Reviews mechanical engineering fundamentals such as fluid dynamics, hydraulics, mathematics, mechanics, etc., in addition to the important advanced topics common to all mechanical engineers. Reviews sample multiple-choice problems in class. The course concludes prior to the state exam.

MEG 0182. Mechanical Cost Estimating and Bidding. 2.5 Hours.
Introduces mechanical cost estimating from receipt of plans and specifications to taking off quantities and estimating materials and labor. Specific topics include subcontractor pricing, interpretation of contract documents, profit determination, overhead factors, adjustments, claims, optimizations, and bidding strategy. This course is specifically geared for HVAC trades plus sub trades.

MEG 0206. Testing, Adjusting, and Balancing HVAC Systems/Air and Water. 2.5 Hours.
Covers how to estimate jobs; instruments used; fan systems involved; air distribution devices; and how to test, adjust, and balance the various types of HVAC systems. Includes an on-site field practicum.

MEG 0301. HVAC Temperature Controls and Systems Design. 3 Hours.
Studies the control industry. Discusses fundamentals of electric, pneumatic, and electronic controls. Covers current practices relating to the application and design of residential and commercial systems (electric, gas, and oil), cooling controls, heat pump, commercial, and solar controls.

MEG 0303. Introduction to HVAC Systems Design 1. 2.2 Hours.
Presents the fundamentals of the design and installation of heating, ventilation, and air-conditioning (HVAC) systems for personnel currently or potentially involved in the HVAC field. Topics include basic calculation of heating and cooling loads, warm-air duct heating systems design, commercial air-conditioning systems design, air handling and duct systems design, and techniques for estimating labor and material for HVAC jobs. Includes relevant aspects of the Massachusetts State Building Code, Article 31. Provides background for more advanced courses in HVAC systems.

MEG 0304. HVAC Systems Design 2. 2.5 Hours.
Emphasizes application and design of HVAC systems on psychrometric charts, correlating the calculations and selection of equipment with psychrometrics. Focuses on air distribution and duct design, selection of HVAC equipment, fans and fan laws, design of refrigerant piping systems, and pump application. Includes case studies that illustrate some of the field problems with HVAC systems.

MEG 0307. Intelligent Building Systems. 2.5 Hours.
Introduces and examines the "intelligent building." Topics surveyed include the integrated building automation system; integrated energy management; fire management; security management; HVAC, lighting, and other design trends in intelligent buildings; electrical wire management; use of digital telephone techniques for building automation communications; and office furniture. Case studies review intelligent buildings and the intelligent healthcare facility. A field trip is planned.

MEG 0308. Introduction to HVAC Systems. 0.7 Hours.
Covers fundamentals of the design and installation of heating, ventilation, and air-conditioning (HVAC) systems for personnel currently or potentially involved in the HVAC field. Topics include basic calculation of heating and cooling loads, warm-air duct heating systems design, commercial air-conditioning systems design, air handling and duct systems design, and techniques for estimating labor and material for HVAC jobs. Includes relevant aspects of the Massachusetts State Building Code, Article 31.

MEG 0323. Overview and Principles to Building Commissioning. 0.7 Hours.
Offers students an opportunity to work with a ten-step process to examine proper building commissioning procedures. Building commissioning is the process of inspecting and testing new construction or renovation projects after all work is complete but prior to final approval and payment from the owner. Building commissioning is the last critical step in a project that ensures the owners’ expected level of quality and work they contracted for has been achieved.

MEG 0350. Fundamentals of Steam and Hydronic Systems Design and Application. 2.2 Hours.
Covers hydronic heating and low-pressure steam heating. Designed for maintenance personnel, HVAC contractors and installers, and anyone who wants to learn more about hot water and steam systems. Describes the proper operation, location, and selection of various components found in all hydronic systems (proper sizing and selection of centrifugal pumps, various methods of air control and expansion tank sizing, and the various pumping methods such as primary/secondary and parallel and series pumping). Describes how low-pressure systems were designed to operate. Details the components found in one-pipe and two-pipe steam systems. By understanding how these systems were designed to operate, it becomes much easier to either troubleshoot a specific problem or improve the overall operating efficiency of these systems.