Civil and Environmental Engineering - CPS (CIV)

CIV 0050. Using Computers in Building Design and Construction. 2.2 Hours.
Introduces the concepts of how computer equipment and programs are used to solve business problems, specifically, covering how standard commercial software tools are applicable to the solution of building design, construction, and facilities management business problems. Uses word processing, spreadsheets, desk information management systems, communications, and Internet overview. Uses Microsoft Windows, Microsoft Office Suite (MS-Word, MS-Excel, MS-Outlook), and Netscape for classroom exercises. Offers students an opportunity to develop various application solutions for problems in budgeting and cost estimating, proposal writing, and contract management in this hands-on, lab-based course.

CIV 0108. Design of Building Plumbing Systems. 3 Hours.
Introduces building plumbing systems design for use in residential and commercial buildings. Offers instruction in the calculations, design, and layout of systems, including water supply and distribution, wastes, vent and drainage systems, and commercial and medical gases. Focuses on relevant aspects of the Massachusetts State Plumbing Code. Offers students an opportunity to work with and implement the statutes in the design of several complete plumbing systems.

CIV 0109. Design of Building Electrical Systems. 3 Hours.
Introduces the design of electrical systems for residential and commercial structures. Topics include the principles of electricity, single-phase and three-phase power, voltage selection, branch and feeder circuit design and calculations, transformer and panel board design, building load analysis, motor feeder calculation, power factor correction, and lighting fundamentals. References electrical code article where required.

CIV 0111. Architectural Technology and Building Materials. 3 Hours.
Introduces materials and methods used in building construction. Reviews light and heavy construction, with attention to foundations, framing, roofing, interior and exterior finish, insulation, hardware, and painting. Topics include wood materials, concrete and masonry construction, steel, acoustical and insulation materials, and glass. Discusses how to select materials based on application, cost, CSI format, and other factors.

CIV 0114. Construction Law. 2.5 Hours.
Provides an intensive, practice-oriented introduction to construction law. Topics include principles of contract formation; roles and principal obligations of the owner, lenders, design professionals, construction manager, and contractors; types of contracts used in construction practice; bidding for private and public work; construction bonds; standard AIA, AGC, and other contract forms; rules for interpreting contracts; authority and responsibility during the construction phase; and arbitration/litigation as a means of resolving disputes. Discusses selected chapters of the Massachusetts General Laws relating to construction. Offers students an opportunity for solid grounding in the legal principles on which the construction industry operates.

CIV 0115. Construction Cost Estimating and Bidding. 3 Hours.
Introduces construction cost estimating from receipt of plans and specifications to taking off the quantities and estimating materials and labor. Topics include reviewing subcontractor quotes, interpreting contract documents, assessing overhead costs, determining profit, overhead factors, adjustments, and bidding strategies.

CIV 0119. Managing Construction Contracts. 2.5 Hours.
Focuses on improved methods of planning, forming, administering, and monitoring contracts. Uses a systems approach to contract planning and formation. Introduces and examines change orders, disputes, schedule delays, and claims.

CIV 0134. Scheduling Construction Projects. 2.5 Hours.
Designed for project managers, schedulers, job-site managers, foremen, and small business owners. Topics include introduction to project scheduling tools, such as Gantt Charts, PERT, CP/M, and network analysis from the viewpoint of project planning and control. Introduces computer applications and techniques. Discusses project “crash” techniques as applied to cash flow and the avoidance of penalties.

CIV 0168. Construction Supervisor’s Building Code Review. 2.2 Hours.
Designed to prepare students for the Massachusetts Construction Supervisor’s License Exam. Reviews code administration, materials and design, safety, site work, mechanical systems, fire protection, and finished roofing systems.

CIV 0170. Construction Blueprint Reading. 2.5 Hours.
Offers students the opportunity to develop basic skills for reading a set of architectural working drawings. Areas covered include dimensions, symbols, conventional representation, abbreviations, and the use of the architectural scale and scaling.

CIV 0174. Supervisory Management. 2.5 Hours.
Covers the four functions of management: planning, directing, organizing, and controlling. Surveys different styles of management and the role of the manager within the business. Topics include delegating authority, communication, organizing, motivating employees, selecting and appraising employees, leading employees, managing the boss, conducting meetings, handling problem employees, exercising control over productivity, quality and safety, team building, and handling personal and employee stress.

CIV 0228. Principles of Facilities Management 1. 2.2 Hours.
Seeks to link and integrate the specialized technical and engineering skills that form facilities management and that are presented in the certificate in facilities management. Examines the various practices that combine principles of engineering sciences, architecture, human behavior, and business administration to create facilities management.

CIV 0232. Landscape and Grounds Management. 2.2 Hours.
Designed for those who maintain either small or large areas. Explores money-saving tips on equipment, fertilizer, and the use of proper design to cut maintenance costs. Discusses safety, scheduling, flower planting, types of grasses and shrubs, and snow removal. Fall and spring classes include a site survey of the school grounds.

CIV 0245. Construction Project Management 1. 2.2 Hours.
Initiates a project management approach to planning, scheduling, and controlling a project through a case study method of analysis. Offers students an opportunity to understand new project management techniques, organization principles, and group synergism. Seeks to prepare the student for CIV 0246.

CIV 0246. Construction Project Management 2. 2.2 Hours.
Introduces the use of application software in the planning and control of construction projects. Students will learn to use information from construction documents to develop a construction schedule. Students will also learn about the use of computers in solving business problems in construction.
CIV 0246. Construction Project Management. 2.2 Hours.
Introduces successful construction project management from project planning and design through project award, buyout, implementation, on-site monitoring and control, completion, and startup. Uses project management techniques to solve actual construction cases in a team-oriented environment. Examines a step-by-step project management analysis of a typical medium-sized construction project’s requirements. Recommended for all those aspiring to a responsible position in project management.

CIV 0307. Introduction to Fire Protection Systems. 2.2 Hours.
Introduces the fire protection and safety industry. Covers a wide variety of topics, including chemistry and physics of a fire, building construction considerations, smoke and heat detection systems, fire suppression systems and extinguishing agents (CO2, Halon 1301, sprinkler), fire extinguishers, and means of egress considerations. Course materials cover applicable state building codes and NFPA standards.

CIV 0450. Civil Engineering—Structural Focus. 3.2 Hours.
Offers students an opportunity to prepare for the Principles and Practice (PE) License Examination in Civil and Structural I Engineering. Includes a review of structural analysis; hydraulics; concrete, steel, timber, and masonry design; traffic and highway engineering; engineering economy; soils, shallow and deep foundations, and retaining structures; and bridge and seismic design. Reviews sample problems in class. The course concludes prior to the state exam.

CIV 0655. Introduction to AutoCAD. 2 Hours.
Introduces students to the concept of Computer-Aided Drawing (CAD) using the industry standard AutoCAD for Windows. Designed to help engineering professionals, facilities managers, plant engineers, building owners, HVAC technicians, and maintenance personnel to convey sketches and ideas in a professional manner. Topics include an overview of computer hardware, common problems and solutions, file structure, setting up new drawings, drawing coordinate title blocks, layer concepts, block creation, and editing and text tools. Printing of all drawings and projects provides students with a complete portfolio of their work. Most of the drawings are completed in class, but some homework assignments require the student to use AutoCAD for their completion. The computer labs are available to students after hours for this purpose.

CIV 0661. Introduction to Project Management. 2 Hours.
Seeks to provide a thorough, comprehensive introduction to the terminology and process of successfully managing projects in a facilities environment. Introduces the best practices for successfully initiating, planning, executing, controlling, and closing out a project. Also introduces the concepts of identifying and managing "risk," as well as practices for managing change throughout the life of a project. The objective is to provide a solid foundation for a more in-depth study of project management.

CIV 0662. Intermediate Project Management. 2 Hours.
Covers in-depth topics pertaining to the initiation, planning, and closeout of facilities projects. This highly interactive, skill-oriented course seeks to offer a balance of leadership and technical skills to be successful as a project leader.

CIV 0663. Facilities Management and Leadership Capstone. 2 Hours.
Assigns participants a real-world project, which they are required to initiate, plan, execute, control, and close out. Throughout the project process, participants are expected to exercise skills in hiring appropriate staff, supervising and coaching project employees, managing scope, identifying and mitigating risk, and using other best practices to lead and manage a project for successful results. Participants are expected to analyze and reflect on their own leadership, communication, strategic planning, and problem-solving strengths and weaknesses and to keep a journal to facilitate the self-reflection process and to present project findings and results to the class.