Jefferson
Thomas Jefferson University

M.S. in Construction Management Course Descriptions

CMGT-600 - Constructn Estimatn & Schedn (3 Credits)

This course focuses upon the planning and scheduling stages of the building process including preconstruction phase, with particular emphasis upon reading construction documents and basic estimating principles applied to small-scale and commercial projects. Techniques for estimating unit quantities and costs of materials, labor and equipment are introduced with given industry applications, building specifications, and computer software. Scheduling principles are introduced with Critical Path Method (CPM) through calculations and software applications. The required software should be installed on students' personal laptops. See CABE Laptop Requirements for details.

CMGT 601 - Codes and Specifications (3 Credits)

The course offers an introduction to building code requirements, material specifications and performance standards, and their application to the building design and construction process. Students develop an appreciation for and understanding of how building codes seek to ensure building performance and occupant safety and how related standards and specifications support these goals.

CMGT-602 - Constructn Informatn Modeling (3 Credits)

This course is a BIM-based course to introduce students the aspects of the related BIM software. Students will be expected to develop their skills, including architecture, structure, and mechanical, electrical, plumbing (MEP) components of BIM, using the required software through lectures and self-study. Students will be introduced to estimating and collaboration skills relative to the application of the software to real-world cases. The required software should be installed on students' personal laptops. See CABE Laptop Requirements for details.

CMGT-603 - Const Law: Roles & Responsibi (3 Credits)

Current legal problems associated with the construction industry are investigated from management's perspective by considering the roles assigned to various project participants, reviewing case law, and studying statutory requirements. Students will gain the knowledge to effectively identify and manage the legal and contractual risk associated with construction. This includes understanding current legal and ethical problems associated with the entire building process from preconstruction through project closeout. The class scrutinizes contractual relationships, delivery methods, insurance, bonding, indemnification, dispute resolution, and other risk management tools to better deliver projects on time, within budget, and avoid legal claims.

CMGT-604 - Project Finance & Cost Control (3 Credits)

This course probes the economics of construction and analyzes project control systems used to effectively manage cost and time. Principles drawn from cognate business fields, specifically accounting, finance, and

taxation, are given real-life application relative to construction projects of multiple types and scales. Key budgetary issues are examined in-depth, including financial statements and balance sheets, variance analysis and optimum cash flow methods, as well as efficient cost reporting systems. Additional topics include internal controls, financial analysis and presentation, contractor surety and lending, and fraud, with particular emphasis upon cost-effective methods to procure and deliver construction projects including lump sum, unit price, cost-plus, and design-build.

CMGT-605 - Contemporary Topics in Construction (3 Credits)

This seminar course is an opportunity for graduate construction management students to explore emerging trends in the construction industry while integrating the knowledge and skills developed through their previous coursework. Seminar discussions will respond to readings, guest lecturers and project reviews presented by industry partners. The course includes individual and group research projects the results of which are also discussed during seminar meetings. Material and discussions will include topics such as professional practice, integrated project delivery, industry-specific ethical challenges, sustainable practice, and career alternatives.

Prereqs: By permission of the Program Director

CMGT-606 - Construction Risk Management (3 Credits)

This course examines the key concepts, models, codes, tools and techniques used in managing risks within the architecture, construction, and engineering industries. The course will focus on planning for the effective implementation of the risk management process, identification, and qualitative and quantitative assessment of risks, appropriate strategies to respond to risks, and how to sustain the risk management process throughout the life of a construction project. Site safety concepts will be introduced in connection to OSHA requirements. Topics also include quality management and environmental requirements.

CMGT 607 - Introduction to Construction Project Management (3 Credits)

This foundation course introduces students to the basic construction management concepts and principles as applied to contemporary practice and investigates the intersecting roles of construction manager, architect, and owner. The course will explore the various types of construction along with identifying terms and specific industry vocabulary. Students will learn to read and inspect construction graphics. Topics include Project Delivery Methods (PDMs), construction contracts and specs, CSI master format, and common software applications used in the construction industry.

CMGT-608 - Constructn Environmental Mgmt. (3 Credits)

This course examines the key concepts, systems, laws, tools and techniques used in managing environmental risks within the architecture, construction and engineering industries. The course will focus on environmental issues from a construction business management perspective and include analytical techniques, management processes and business strategies that aid successful reconciliation of environmental and economic performance goals for construction operations. Through a combination of real-life cases, readings, lectures, videos, and simulations, class sessions will seek to engage students in discussions aimed at developing systems of corporate environmental management, covering compliance,

environmental risk management, pollution prevention, product stewardship, supply chain management, and communication.

Prereqs: By permission of the Program Director

CMGT 609 – Construction Site Operations (3 Credits)

This course familiarizes students with methods, procedures, and practices required for the effective management of field operations preparing students to assess construction project sites and prepare comprehensive site management plans. The course explores aspects of site management such as layout, logistics, sustainable practices, administration, and false work in a hands-on collaborative environment.

Prereqs: By permission of the Program Director

CMGT-612 - Master's Project I (3 Credits)

This course is the first of a two-term independent study sequence that serves as the culminating experience in the program and requires the student to translate the design team's intentions and the client's expectations into sustainable built form. Working in consultation with the instructor, the student must choose a specific real-world project and produce a comprehensive manual that mimics a bidding proposal. Parts of the manual that include company and project overviews, detailed estimate, detailed schedule, cash flow, a 3D model created with BIM, site logistics plans, risk, environmental, quality, and safety management plans, as well as a LEED proposal, will be completed as a preparation for Master's Project II. The required software should be installed on students' personal laptops. See CABE Laptop Requirements for details.

Prerequisite: CMGT-600, CMGT-602, CMGT-603, CMGT-604, and CMGT-606

CMGT-614 - Materials & Mthds of Construc (3 Credits)

This course explores a management approach to evaluation and policies involving materials, assemblies and methodologies of general construction. Students are exposed to basic building materials, components, and systems and the appropriate techniques to evaluate their value, constructability, and other characteristics affecting project success. Emphasis is placed on the development of company policies regarding material selection, procurement, handling and assembly. Case studies and ongoing project examples are an integral part of the course.

Prereqs: By permission of the Program Director

CMGT-616 - Real Estate Development (3 Credits)

This lecture course will educate students on all aspects of sustainable development ranging from construction startup to project financing to management of green construction. Students will learn techniques of cost benefit analysis including such aspects as impact of zoning and code ordinance for green projects to understanding tax incentives for such projects. Students will complete case studies and finish the semester with a completed proposal for a sustainable project.

Prereqs: By permission of the Program Director

CMGT-618 - Heavy Construction Principles & Practice (3 Credits)

This course is intended to provide students with an introduction to the principles and practices employed in heavy/civil infrastructure and marine construction. The course content is presented from a practical perspective focusing on the management of heavy/civil construction projects. The course is designed for construction management majors as well as those majoring in related fields and is intended to provide a broad understanding of heavy construction techniques and contracting.

Prereqs: By permission of the Program Director

CMGT-901 - Master's Project II (3 Credits)

This course is the second in a two-term independent study sequence and will focus on continuing and completing the Master's Project begun in CMGT 612. Students must choose a specific project and produce a comprehensive project manual based on work completed during the course sequence. The manual should include company and project overviews, work breakdown structure, detailed estimate, schedule, cash flow, a 3D model created with BIM, site logistics plans, risk, environmental, quality, and safety management plans, as well as a LEED proposal. If agreed to by the instructor and the department chair, students will present their final project for review and critique by a jury of committee members composed of industry practitioners and faculty. The required software should be installed on students' personal laptops.

Prerequisite: CMGT-612