

Construction Project Management Certificate

Course Descriptions

CMGT – Construction Management Courses

REAL – Real Estate Courses

CMGT 4120: Construction Planning & Scheduling

Coreq: CMGT 4420

Offered: Winter

Understanding and applying scheduling and control to construction projects is essential to successful construction management. Project scheduling emphasizes network-based schedules, such as critical path management (CPM), network calculations, critical paths, resource scheduling, probabilistic scheduling and computer applications. Project control focuses on goals, flow of information, time and cost control, and change management. NOTE: Windows Based Operating system is required to run classroom scheduling software.

CMGT 4155: Sustainable Development/LEED

Offered: Fall

The course includes many case studies of historic and contemporary structures exemplifying various sustainability features. Emphasis will be placed on how LEED project certification influences the overall construction project. Topics will include LEED certification techniques for sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, innovation and design. The following topics will be covered from a LEED perspective: ventilation, air conditioning, heating, electrical lighting, energy efficiency, and building control systems. The student will study and analyze how management and LEED techniques are applied to current construction projects.

CMGT 4177: Environmental Systems & MEP Coordination

Offered: Spring

A study of mechanical and electrical systems (MEP) used in the construction of buildings. Course content will include system design, component selection and utilization for energy conservation, cost estimating of systems, coordination and management of installation. Specific systems included are electrical, air conditioning, heating, ventilation and plumbing, fire protection, life safety, communication, power systems and lighting. The course will also consider coordination of MEP systems and explore emerging technology and environmental issues related to mechanical and electrical systems in buildings.

CMGT 4250: Construction Job Site Management

Offered: Summer (Online Synchronous Format)

This course addresses how a successful construction project is managed and administered from design through construction to closeout. Emphasis will focus on how to unite the key stakeholders (contractors, architects, engineers, etc.) to provide them with a workable system for operating as an effective project team. The latest technology, laws and regulations associated with contract administration will be presented. Topics pertinent to each stage of a project are

introduced and discussed as they occur throughout the life of the project. Numerous real-world examples will be utilized throughout the course. Various electronic project administration tools and techniques will be demonstrated including Building Information Modeling.

CMGT 4310: Cost Modeling and Trend Management

Prereq: CMGT 4410 or (CM, Architecture or Engineering background preferred)

Offered: Spring

This course covers various approaches to construction cost estimating at the conceptual stages of planning and design through detailed construction. Students will learn parametric estimating techniques and how they are applied to construct and predict reliable budgets at the earliest stages of design. Students will build cost models and refine those models with greater detail as design develops through a project. Building information modeling will be introduced and used to create massing models to demonstrate design impacts on project costs. Cost trending techniques will be presented to manage, monitor and document project performance relative to cost. \$100 Course Fee.

CMGT 4320: Introduction to Architectural Planning & Design Management

Offered: Fall* and Spring*

This course introduces students to the significant value that architecture brings to real estate and the built environment and the various services and professions associated with it. Students will be introduced to principles, protocols and the planning process related to the design function and the link between the architect's vision and the finished physical structure. Students will be introduced to design thinking theory and application. Students will learn to read and interpret the various graphical and written construction documents, know how they are developed and what information they contain. Coverage of architectural, structural, mechanical, electrical, plumbing, and civil drawings and specifications. The business model for design services will be explored as well as the unique risks and challenges associated with managing the design throughout the various stages of development and construction. *Additional Lab 2 hrs/1xWk is also required. \$30 Course fee.

CMGT 4410: Construction Building Systems

Offered: Fall*, Spring*

A survey of residential and commercial construction materials, means, and methods associated with the various structural and architectural systems used to design and construct buildings. Project plans and specifications will be incorporated to teach the basic sequencing and overall construction process. The influence of sustainability in construction will be introduced.

*Additional Lab 2 hrs/1xWk is also required. \$85 Course fee.

CMGT 4420: Construction Estimating

Prereq: CMGT 4320 and CMGT 4410

Offered: Winter*

This course is designed to provide the student with the theory, principles and techniques of quantity analysis (take-off), labor determinations, overhead and profit analysis. It offers insight into the construction estimating process. The role of the estimator, types of estimating, CSI divisions, bid/contract documents, change order pricing, design/build projects and estimation

compilation will be introduced. Discussions regarding the cost/benefit of sustainable materials and typical construction materials will enhance the requisite knowledge of construction estimating. *Additional Lab 2 hrs/1xWk is also required. \$30 Course fee.

CMGT 4438: Legal Issues & Risk Management

Offered: Winter

General contract and real estate law, including property rights, title concepts, deeds, purchase contracts, law of agency, environmental issues and disclosures, basics finance concerns, tax law, landlord-tenant law, construction contracts, indemnity agreements, rights and remedies of property owners, contractors and subcontractor's issues, and various areas of liability for real estate practitioners and property owners.

CMGT 4480: Construction Project Management

Offered: Winter

Principles and techniques of construction project management, use of systems analysis, internal and external procedures, planning, programming, budgeting and staffing, controlling major projects, emphasis on construction scheduling techniques with case application. \$30 Course fee.

CMGT 4490: Residential Development

Offered: Fall, Summer

A course sequence designed to emphasize the practical application of the theories and concepts of residential development. The course provides a capstone experience for seniors. Students are expected to apply their knowledge of general business, real estate and construction management practices by forming a student business entity, acquiring land, building and selling a residential property in a case format. Students will apply accounting, finance, marketing, real estate and construction management techniques in the planning for a residential development. The application of green building materials and methods is emphasized. Off Site visits will be arranged during the first class.

REAL 4000: Triple Bottom Line and the Built Environment

Offered: Fall

An exploration of the importance of real estate and the built environment through triple bottom line analysis of its social, environmental, and economic impacts. The course considers a "cradle to cradle" sustainability model that links the various phases, functions, and professions of real estate, project delivery, and asset/facility management to create holistic, value-generating solutions for society. Professional practices/skillsets associated with the many career options that engage the built environment are demonstrated.