

# CONSTRUCTION MANAGEMENT (CMGT)

## CMGT 10001 INTRODUCTION TO CONSTRUCTION MANAGEMENT 3 Credit Hours

Serves to introduce the basic terms, concepts, procedures and current trends in the construction industry.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## CMGT 11044 CONSTRUCTION SAFETY 3 Credit Hours

The theories and principles of construction safety and health applied to real-world setting. Upon completion of course materials and required attendance hours, students receive their OSHA 30 certification.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** CTAG Construction Technology

## CMGT 11071 CONSTRUCTION MATERIALS AND METHODS I 3 Credit Hours

An introduction to principles of building construction, including preparation for the structures and environmental control sequences. Includes a more detailed and systematic look at wood light-frame construction.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** CTAG Construction Technology, TAG Engineering Technology

## CMGT 21071 CONSTRUCTION MATERIALS AND METHODS II 3 Credit Hours

Ties together steel and concrete structural systems and the integration of building service systems, with a focus on the construction and detailing of building enclosure systems.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## CMGT 22200 CONSTRUCTION DOCUMENT READING 3 Credit Hours

The reading and understanding of the drawings that are used to communicate information about commercial and residential buildings.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** CTAG Construction Technology

## CMGT 27210 SUSTAINABILITY IN THE BUILT ENVIRONMENT 3 Credit Hours

With broad coverage including architecture, engineering, and construction, this course nevertheless delivers detailed information on all aspects of the green building process, from materials selection to building systems and more.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture, 0 lab, 0 other

**Grade Mode:** Standard Letter

## CMGT 31015 CONSTRUCTION TECHNOLOGY 3 Credit Hours

Course provides basic concepts and practices of the construction industry, including estimating, materials, tools, techniques and production of residential construction.

**Prerequisite:** None.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 1 lecture, 4 lab

**Grade Mode:** Standard Letter

## CMGT 31023 CONSTRUCTION SURVEYING 3 Credit Hours

The study of surveying, including fieldwork, using state-of-the-art equipment and its relationship to the construction documents.

**Prerequisite:** CMGT 22200.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## CMGT 31033 MECHANICAL SYSTEMS 3 Credit Hours

An overview of mechanical systems in commercial and residential buildings.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## CMGT 31040 ELECTRICAL SYSTEMS FOR CONSTRUCTION MANAGERS 3 Credit Hours

An overview of electrical systems in commercial and residential buildings.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## CMGT 31044 ADVANCED CONSTRUCTION SAFETY AND MANAGEMENT 3 Credit Hours

Course enables students to be able to properly manage the construction safety techniques and practices they learned in CMGT 11044. Course provides the opportunity for students to learn how to utilize management skills to lead and implement an effective construction safety program.

**Prerequisite:** CMGT 11044.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## CMGT 31045 CONSTRUCTION RISK MANAGEMENT 3 Credit Hours

Course provides an in-depth study of various risks associated with construction projects, and how those risks affect the construction industry. Topics of discussion include analytical and management techniques used to identify, analyze and respond to risks. Students review actual legal case studies and develop written opinion papers.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 31046 INTRODUCTION TO INSURANCE AND WORKER'S COMPENSATION 3 Credit Hours**

Introduction to construction-related insurance products and worker's compensation practices and policies. Course provides the understanding of the legal, management and costing implications associated with each of these, both prior to and during a construction project.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 32001 PROPOSAL DEVELOPMENT AND ANALYSIS 3 Credit Hours**

(Repeatable for credit) Students create and combine project management, safety and quality control plans to prepare quantity takeoffs and schedule for a construction project, in the form of a construction proposal and presentation. Further analysis is done on general construction proposals.

**Prerequisite:** CMGT 10001; and special approval.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 33092 CONSTRUCTION MANAGEMENT INTERNSHIP (ELR) (WIC) 2-3 Credit Hours**

(Repeatable for maximum of 6 credit hours) Supervised work-study experience in an approved construction-related business that is relative to a student's program. The course can be taken for 3 credit hours in the semester for full-time employment (450+ total hours) or 2 credit hours for part-time employment (300-450 total hours). To repeat the course for credit, the student must assume a different position or responsibilities if employed by the same organization, or the student must be employed by a different company.

**Prerequisite:** Minimum 2.250 overall GPA; and Construction Management major or minor; and sophomore standing.

**Pre/corequisite:** CMGT 11044.

**Schedule Type:** Practical Experience

**Contact Hours:** 20-30 other

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement, Writing Intensive Course

**CMGT 33111 INTRODUCTION TO BUILDING STRUCTURES 3 Credit Hours**

Introduction to Building Structures covers the basic concepts of vector mechanics and statics with their application to the relationship between applied forces and internal effects as utilized in either the selection or investigation of structural members subjected to various loading conditions

**Prerequisite:** PHY 13001 or PHY 23101.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture, 0 lab

**Grade Mode:** Standard Letter

**CMGT 37295 SPECIAL TOPICS IN CONSTRUCTION MANAGEMENT 1-3 Credit Hours**

Analysis of significant and current issues in construction management not covered in regular courses. Offered when opportunities and resources permit; the topic is announced when the course is scheduled.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

**CMGT 40095 SPECIAL TOPICS 1-3 Credit Hours**

(Repeatable for credit) The course content is dependent on the special topics content.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

**CMGT 41040 CONSTRUCTION ESTIMATING I 3 Credit Hours**

(Slashed with CMGT 51040) Introduction to estimating and the quantity takeoff process needed to complete accurate estimates for all types of construction projects. Students must have the ability to read and understand construction drawings.

**Prerequisite:** CMGT 11071 and CMGT 21071 and CMGT 22200.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 41041 CONSTRUCTION ESTIMATING II 3 Credit Hours**

(Slashed with CMGT 51041) Course covers putting costs to the project, finalizing the bid, incorporating the estimate into the schedule, buying out the project, bidding ethics and using computer spreadsheets, including Excel, to automate estimating functions.

**Prerequisite:** CMGT 41040.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 41047 FUNDAMENTALS OF INDUSTRIAL AND CONSTRUCTION HYGIENE 3 Credit Hours**

Focuses on the environmental, community and occupational health issues within facilities and construction sites. Course provides the opportunity for students to recognize, evaluate and control occupational hazards.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 41048 OCCUPATIONAL SAFETY AND HEALTH LAW 3 Credit Hours**

Course focuses on general legal doctrine and practical considerations of the Occupational Safety and Health Act (OSHA). Covers the scope of the act, duties under the act, enforcement, adjudication and OSHA-related litigation.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42030 BUILDING INFORMATION MODELING FOR CONSTRUCTION MANAGEMENT 3 Credit Hours**

This course is intended to apply Building Information Modeling tools in a meaningful manner within the field of Construction Management. The course will progress through the core concepts of widely used VDC tools: Sketchup, Revit, Navisworks. The key areas of focus will be conceptualizing projects, quantity takeoff, scheduling, and constructability review. Class time will involve hands-on training and exercises that will simulate real-world situations and deadlines. Complexity levels in the models will be minimized to ensure focus on concepts. Students will have multiple opportunities to hone their presentation skills with their projects through the course progression.

**Prerequisite:** CMGT 22200.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42050 INTERNATIONAL CONSTRUCTION MANAGEMENT 3 Credit Hours**

Course focuses on the culture and management of international design and construction operations, with an emphasis on business development, financing, planning, contracts and negotiations, special construction techniques in adverse environments, procurement and logistics. A short-term study abroad trip is included in the course.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42051 ALTERNATIVE ENERGY SYSTEMS IN BUILDING DESIGN 3 Credit Hours**

Course focuses on the construction application of alternative mechanical, electrical and plumbing systems in the built environment. Emphasis on energy efficient systems, energy conservation, cost benefits, building issues and construction techniques to develop these systems.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42052 MECHANICAL AND ELECTRICAL ESTIMATING 3 Credit Hours**

Course focuses on estimating mechanical, electrical, plumbing and fire protection systems for the built environment. Covers detailed estimating practices of mechanical systems, including indirect costs, direct costs, bidding strategies, piping, pumps, plumbing systems, fire protection, HVAC, ductwork, insulation, automatic temperature controls, supports and manpower.

**Prerequisite:** CMGT 31033 and CMGT 31040.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42053 SUBCONTRACTOR LEADERSHIP AND PRACTICES 3 Credit Hours**

Course focuses on the leadership, operations and overall management of construction subcontractor companies. Emphasis on how subcontractor leaders can avoid mistakes and manage risk to make their scopes of work run more intelligently, effectively and efficiently.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42054 CIVIL ESTIMATING 3 Credit Hours**

Course provides an in-depth review and application of civil construction estimating techniques and technology associated with civil estimating practices. Course covers site work, site utilities, substructures and heavy equipment estimating.

**Prerequisite:** CMGT 10001 and CMGT 41040.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42055 CIVIL UTILITY SYSTEMS 3 Credit Hours**

Course discusses the installation, construction, renewal, estimating and management of underground utility systems. Maintains an emphasis on minimal soil and environmental disturbance.

**Prerequisite:** CMGT 10001.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42056 SOILS AND MATERIALS 3 Credit Hours**

Building on previous knowledge of construction, students explore the nature of soils and how they can influence construction operations, soil safety, soils within the construction contract, soil classifications, soil strengths and specification sections tied to soils and materials.

**Prerequisite:** CMGT 10001.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

**CMGT 42105 CONSTRUCTION CONTRACTS AND LAW 3 Credit Hours**

(Slashed with CMGT 52105) Course covers the fundamentals of construction contracts and law; the impact of information technology on contracts and contracting; and the effect of contracts and law on the management, administration and costs of construction work.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 42107 CONSTRUCTION SCHEDULING 3 Credit Hours**

(Slashed with CMGT 52107) The traditional theory of planning, scheduling and controlling construction projects. Current industry standard computer applications for scheduling are utilized.

**Prerequisite:** CMGT 41041.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 43096 INDIVIDUAL INVESTIGATION IN CONSTRUCTION MANAGEMENT 1-3 Credit Hours**

(Repeatable for credit) Independent study carried out by a student under the supervision of a faculty member. Subject content, objectives, assignments and evaluation methods may vary.

**Prerequisite:** Junior standing; and special approval.

**Schedule Type:** Individual Investigation

**Contact Hours:** 3-9 other

**Grade Mode:** Standard Letter

**CMGT 43099 CONSTRUCTION MANAGEMENT CAPSTONE (ELR) 3 Credit Hours**

The application of all previous construction management courses and experiences to ensure all major learning objectives have been obtained, and that these learning objectives can be applied to performance similar to industry practices.

**Prerequisite:** CMGT 31033 and CMGT 31040 and CMGT 41041 and CMGT 42105 and CMGT 42107; and senior standing.

**Schedule Type:** Lecture, Project or Capstone

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

**CMGT 50095 SPECIAL TOPICS 1-3 Credit Hours**

(Repeatable for credit) Various content based on the special topics content.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

**CMGT 51040 CONSTRUCTION ESTIMATING I 3 Credit Hours**

(Slashed with CMGT 41040) Introduction to estimating and the quantity takeoff process needed to complete accurate estimates for all types of construction projects. Students must have the ability to read and understand construction drawings.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 51041 ADVANCED ESTIMATING 3 Credit Hours**

(Slashed with CMGT 41041) Course covers putting costs to the project, finalizing the bid, incorporating the estimate into the schedule, buying out the project, bidding ethics and using computer spreadsheets, including Excel, to automate estimating functions.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 52105 CONSTRUCTION CONTRACTS AND LAW 3 Credit Hours**

(Slashed with CMGT 42105) Course covers the fundamentals of construction contracts and law; the impact of information technology on contracts and contracting; and the effect of contracts and law on the management, administration and costs of construction work.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 52107 CONSTRUCTION SCHEDULING 3 Credit Hours**

(Slashed with CMGT 42107) The traditional theory of planning, scheduling and controlling construction projects. Current industry standard computer applications for scheduling are utilized.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 52110 ADVANCED CONSTRUCTION MANAGEMENT 3 Credit Hours**

A comprehensive application of construction management principles and practices to various situations and projects according to construction industry methods and performance standards.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 62030 BUILDING INFORMATION MODELING FOR CONSTRUCTION MANAGEMENT 3 Credit Hours**

Course reinforces and investigate the usage of building information modeling (BIM) as a construction management tool. Students create BIM models, with scheduling and cost loading, to understand how BIM usage is maximized within the built environment. Student utilizes software applications to create the BIM model and integrate the construction schedule and estimate. Students also perform research on the application of BIM in the industry.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 62040 CONSTRUCTION METHODS IMPROVEMENTS 3 Credit Hours**

A focused study of the philosophy and principles of quality management as applied to the construction industry. Course presents a project-based approach to the principles and practices of Total Quality Management (TQM) in construction projects and the application of TQM and other quality measures during different phases of the construction process.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 62050 INTERNATIONAL CONSTRUCTION MANAGEMENT 3 Credit Hours**

Topics include operating and sustaining an international business or business presence, the global market, project funding, case studies and best practices. Course includes project-specific case studies.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 62060 NEGOTIATION IN THE BUILT ENVIRONMENT 3 Credit Hours**

Examination of negotiation theories, strategies and tactics as applied to transactions in the construction and technological environments. Establishment of win-win environment in dealing with the project parties by adopting creative means to solve problems and resolve disputes. Practice through negotiation case studies, scenarios and role playing.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 62070 ENGINEERING ECONOMICS AND STRATEGIC DECISION MAKING 3 Credit Hours**

Application of engineering economic principles related to evaluating alternative solutions, replacement decisions and retention decisions. Includes decision and risk analysis, sensitivity analysis, expected value, benefit cost analysis, public sector economics, economic cycle, operation research, strategic management and entrepreneurship in the technological environment.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 62080 ADVANCED CONSTRUCTION RISK MANAGEMENT 3 Credit Hours**

This course provides an in-depth study of various risks associated with construction projects, and how those risks affect the construction industry. This course prepares leaders to make decisions that affect individual projects and the organization as a whole. Topics of discussion include analytical and management techniques used to identify, analyze, and respond to construction risks. Students review case studies, texts, and use instructor examples of how to identify and mitigate risks.

**Prerequisite:** Graduate Standing; and special approval.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 65099 MASTER PROJECT IN CONSTRUCTION MANAGEMENT 3 Credit Hours**

This course is the application of all previous construction management courses and experiences to ensure all major learning objectives have been obtained, and that these learning objectives can be applied to performance similar to industry best practices.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Project or Capstone

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**CMGT 67295 SPECIAL TOPICS IN CONSTRUCTION MANAGEMENT 1-4 Credit Hours**

Analysis of significant and current issues in construction management not covered in regular courses. Offered when opportunities and resources permit; the topic is announced when the course is scheduled.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 1-4 lecture

**Grade Mode:** Standard Letter

**CMGT 67296 INDIVIDUAL INVESTIGATION IN CONSTRUCTION MANAGEMENT 1-3 Credit Hours**

Independent study carried out by a student under the supervision of a faculty member. Subject content, objectives, assignments and evaluation methods may vary.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Individual Investigation

**Contact Hours:** 3-9 other

**Grade Mode:** Standard Letter-IP

**CMGT 67320 APPLIED SUSTAINABILITY IN CONSTRUCTION MANAGEMENT 3 Credit Hours**

Investigation of strategies and methods used by construction managers and others to assist in developing sustainable built environments. Course takes a close look at standards for environmentally sustainable construction and at the application of best management practices for construction activities. Focus is on LEED certification, international standards on environmental management systems and other established criteria, guidelines, standards and tools associated with green building. Provides an in-depth discussion and practical application of LEED assessment, guidelines and standards for various building sectors. Includes a major individual design project/case study involving research in green construction and design on a particular construction project, along with the application of LEED guidelines, assessment and methods to the project.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter