CONSTRUCTION MANAGEMENT (CMGT)

CMGT 1310 Intro Construction Management 3 Credits
Department: College of Business
An introduction to the construction industry and management of construction projects. Materials and methods used in light, heavy, and industrial construction industries, including soils, above and below ground piping, concrete, asphalt, etc. Construction of a small project. Applies principles of ethics, oral and written communication.

CMGT 1320 Light Construction Materials and Methods 3 Credits
Department: College of Business
This course studies light-duty construction systems and an introduction to BIM/CAD. Topics include light frame construction, interior and exterior finish systems, insulation, and sustainability. Course will focus on the development of a fundamental knowledge base for managing construction projects through case study and hands-on experience. Applies principles of oral and written communication. Lab activities may include job site visits and performing field tests.

CMGT 2310 Heavy Construction Materials and Methods 3 Credits
Department: College of Business
Introduction to heavy construction principles and the use of BIM/CAD materials, assemblies and print reading; foundations; concrete construction - including cast-in-place, precast concrete systems and formwork; masonry; finishes; and steel construction. Also applies oral and written communications. Lab activities may include job site visits and performing field work and tests.

CMGT 2320 Construction Graphics & Layout 3 Credits
Department: College of Business
Study and practice of communicating through manual and digital graphics. Emphasis on developing hand-printing and hand-sketching abilities, reading construction documents, developing three-dimensional building information modeling (BIM) ability, and using these concepts to perform construction layout.
Prerequisite(s): CMGT 1310 and (CMGT 1320 or CMGT 2310)

CMGT 2330 Fundamental Statics 3 Credits
Department: College of Business
Fundamentals of structures under load and at rest are introduced; forces and equilibrium, methods of joints, method of sections, methods for multi-force members, and load tracing.
Prerequisite(s): (MATH 2312 or MATH 1316) and PHYS 1305

CMGT 2350 Construction Surveying 3 Credits
Department: College of Business
Introduction to the basic principles of construction surveying. Use of equipment for measurement of horizontal and vertical distances and angles. Field practice and calculations associated with design and layout of small construction projects.
Prerequisite(s): MATH 2312

CMGT 2420 Construction Graphics Communication 4 Credits
Department: College of Business
Study and practice of communicating through manual and digital graphics. Emphasis on developing hand-printing and hand-sketching abilities; reading civil, commercial, and industrial construction documents; developing three-dimensional building information modeling (BIM) ability; and using these concepts to perform construction estimating and layout.
Prerequisite(s): CMGT 1310 and (CMGT 1320 or CMGT 2310)

CMGT 3315 Summer Internship 3 Credits
Department: College of Business
Four hundred hours of pre-planned, unique practicum that provides knowledge and skills not found in the traditional classroom setting. A final report and oral presentation are required under supervision of an academic advisor. Learning objectives in the following: project management, acquisition and development of residential land, scheduling, construction technology, field operations, office operations, building materials, estimating, finance, marketing, construction management, and/or land use codes and regulations. This course shall be completed during the summer of a student's second or third academic year.
Prerequisite(s): CMGT 2320 or CMGT 2420

CMGT 3330 Structural Behavior I 3 Credits
Department: College of Business
A completion of fundamental mechanics; centroid and moment of inertia, shear force and bending moment, deflections and rotations, statically determinate and indeterminate structures. Properties and behavior of steel materials in construction. Applications in temporary steel construction structures such as scaffolding, and steel erection/bracing.
Prerequisite(s): CMGT 2330

CMGT 3340 Industrial and Mechanical Construction 3 Credits
Department: College of Business
A survey of the systems, including equipment, piping, and materials, used in industrial construction, and applicable codes. Course includes process laboratories, and development of an industrial construction execution plan.
Prerequisite(s): CMGT 2420

CMGT 3350 Electrical Systems 3 Credits
Department: College of Business
Survey of the principles and practices of electrical and electronic systems in residential, commercial, and industrial construction. Includes design, installation, applicable codes, and energy conservation.
Prerequisite(s): CMGT 2420

CMGT 3360 Structural Behavior II 3 Credits
Department: College of Business
Introduction to properties and structural behavior of reinforced concrete members, including concrete mi design. Basic principles of foundation behavior. Applications in temporary concrete construction structures such as concrete forms.
Prerequisite(s): CMGT 3330

CMGT 4100 Internship/Independent Study 1 Credit
Department: College of Business
Four hundred hours of pre-planned, unique practicum that provides knowledge and skills not found in the traditional classroom setting. Special learning objectives in one of the following is recommended, but other objectives will be considered: project management, acquisition and development of residential land, scheduling, construction technology, field operations, office operations, building materials, estimating, finance, marketing, construction management, and/or land use codes and regulations. A final report and oral presentation are required under supervision of an academic advisor. It is strongly recommended this course be completed during the summer preceding a student's final semester or year.
Prerequisite(s): CMGT 2420
Restriction(s):
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment limited to students in the BS-CONS program.

CMGT 4199 Special Topics in Construction Management 1 Credit
Department: College of Business
This course is intended for the investigation of new or special problems in construction, construction science, and construction management under the guidance of a faculty member. This course may be repeated for credit when topics of investigation differ.
May be Repeated for a maximum of 4 hours

CMGT 4270 Strategic Analysis and Evaluation 2 Credits
Department: College of Business
This course takes a comprehensive approach to sharpen analytical, decision-making, leadership, and communication skills using (1) senior paper, and writing other CM technical documents, and (2) construction business strategy game. This course also includes the CM program exit exam and exit interview.
Corequisite(s): CMGT 4470

CMGT 4310 Construction Planning and Scheduling 3 Credits
Department: College of Business
Basic construction project management and scheduling procedures. Work breakdown structure, critical path method, and scheduling logic. Activity durations, status reports, resource allocation, and control. Covers elements of construction ethics and safety.
Prerequisite(s): CMGT 2420

CMGT 4320 Cost Estimating and Analysis 3 Credits
Department: College of Business
Estimation of construction development project costs; direct and indirect, labor, material and equipment. Overhead and profit. Bidding and Computer-based estimating.
Prerequisite(s): CMGT 2320

CMGT 4325 Construction Project Management 3 Credits
Department: College of Business
Study of the concepts and tools used for the management and control of the construction jobsite, including topics of safety, equipment management, quality control. Covers elements of construction ethics.
Prerequisite(s): CMGT 2420

CMGT 4340 Construction Soils and Earthwork 3 Credits
Department: College of Business
Basic principles of soil mechanics/engineering and earthwork are coupled with practical examples that show how construction methods and operations are controlled and/or influenced by natural soils. The course takes a non-design approach in the presentation of this terminal geotechnical course specifically dealing with soils in construction for the construction personnel who do not contemplate further study of soil mechanics or foundation design.
Prerequisite(s): CMGT 2330

CMGT 4350 Legal Practices in Construction 3 Credits
Department: College of Business
Construction contracts for commercial projects. Contract procedures, bidding, changes, substitutions, specifications, insurance, bonding, claims, disputes and payments. Responsibilities of owners and contractors. Covers national and local labor law and labor relations.
Prerequisite(s): BULW 3310

CMGT 4370 Construction Safety Management 3 Credits
Department: College of Business
The study of safety standards, procedures and tools used in the construction industry. Emphasis on applicable safety codes, OSHA safety requirements, job safety analysis and the history and impact of construction safety. Covers elements of construction ethics.
Prerequisite(s): CMGT 2420

CMGT 4380 Sustainable Built Environment and Society 3 Credits
Department: College of Business
Introduction to the concept of sustainability and understanding of its impact on the environment and society. Covers fundamentals of sustainable technologies and practices for development and operation of built environment, including buildings and infrastructure. It addresses energy-efficient design and construction, as well as sustainable use of natural resources and renewable energy. It also introduces the USGBC LEED Certificate Program and economic analysis of sustainable practices.

CMGT 4399 Special Topics in Construction Management 3 Credits
Department: College of Business
This course is intended for the investigation of new or special problems in construction, construction science, and construction management under the guidance of a faculty member. This course may be repeated for credit when topics of investigation differ.
May be Repeated for a maximum of 12 hours

CMGT 4420 Construction Cost Estimating and Analysis 4 Credits
Department: College of Business
Basic construction project management and scheduling procedures. Work breakdown structure, critical path method, and scheduling logic. Activity durations, status reports, resource allocation, and control. Covers elements of construction ethics and safety.
Prerequisite(s): CMGT 2420

CMGT 4470 Capstone Construction Project 4 Credits
Department: College of Business
Development of an actual construction project and/or a business plan. Covers elements of construction ethics; applies principles of oral and written communication. This course should be taken in the last semester.
Prerequisite(s): CMGT 2350 and CMGT 3340 and CMGT 4370 and CMGT 4310 and CMGT 4420

CMGT 5310 Construction Planning and Scheduling 3 Credits
Department: College of Business
Basic construction project management and scheduling procedures. Work breakdown structure, critical path method, and scheduling logic. Activity durations, status reports, resource allocation, and control. Covers elements of construction ethics and safety.
May be Repeated for a maximum of 9 hours
Restriction(s):
Undergraduate level students may **not** enroll.

CMGT 5315 Advanced Construction Planning 3 Credits
Department: College of Business
Theoretical knowledge and practical applications of advanced methodologies for planning, scheduling, monitoring and controlling construction projects. Advanced level applications of 4D scheduling and Primavera P6 for creating and managing construction schedules. Introduction to statistical modeling and computer simulation for planning. software packages widely used in the construction industry. Review of the standard techniques for planning and schduling - CPM, PERT and LOB.
Restriction(s):
Undergraduate level students may **not** enroll.

CMGT 5330 Construction cost Management 3 Credits
Department: College of Business
This course discusses the essential cost estimating and management principles needed by construction managers, including accounting and financial management, to profitably manage the finances of construction companies. Topics in construction cost estimating, construction financial management, construction accounting system, management of costs, profits and cash flows are studied.
Restriction(s):
Undergraduate level students may **not** enroll.

CMGT 5340 Advanced Construction Project 3 Credits
Department: College of Business
Exploration of the fundamentals of advanced technologies for managing construction projects, such as image processing, building information modeling (BIM), virtual construction and information cons communication (ICT)-based project management software package. Application of the theoretical knowledge of project management using advanced technologies. Introduction to the project management body of knowledge and the study of key project management processes.
Restriction(s):
Undergraduate level students may **not** enroll.

CMGT 5350 Legal Practices in Construction 3 Credits
Department: College of Business
Construction contracts for commercial and industrial projects. Contract procedures, bidding, changes, substitutions, specifications, insurance, bonding, claims, disputes and payments. Responsibilities of owners and contractors. Covers national and local labor law and labor relations. Course covers elements of construction ethics.
May be Repeated for a maximum of 9 hours
Restriction(s):
Undergraduate level students may **not** enroll.

CMGT 5355 Conflict and Negotiation Mgmt 3 Credits
Department: College of Business
This course provides an in-depth coverage of construction contract claims and dispute resolution. Topics include: differing site conditions, contract interpretation and administration, delays and accelerations, identification of conflicts and claims, schedule and cost analysis in claims, change order, dispute resolution and negotiation and records and documentation.
Restriction(s):
Undergraduate level students may **not** enroll.

CMGT 5385 Sustainable Practices in CM 3 Credits
Department: College of Business
This course discusses how sustainability and green construction concepts and principles applied throughout the design and construction process. Topics included are the concepts and principles of sustainable development; the newest technologies in green construction and materials; infrastructure sustainability and resilience; case studies on the applications of sustainability concepts in design and construction.
Restriction(s):
Undergraduate level students may **not** enroll.