CONSTRUCTION MANAGEMENT (CONM)

CONM1000 INTRODUCTION TO CONSTRUCTION MANAGEMENT, FACILITIES MANAGEMENT & REAL ESTATE DEVELOPMENT
This course provides an introduction to construction management and facilities management. The course will also explore the process of real estate development as it pertains to the built environment. The course will analyze the cultural context of construction, emphasizing its centrality in the evolution and expansion of the built environment. Industry trends, ethical considerations, delivery systems, technologies and recent "mega" projects including green construction and sustainability will be discussed. (3 credits) fall

CONM1200 BUILDING CONSTRUCTION
Survey of current materials and methods used in building construction, including building foundations; timber, concrete and steel framing systems; masonry construction; interior and exterior finishes. (4 credits) fall

CONM1500 CONSTRUCTION GRAPHICS
The development and interpretation of civil, architectural, structural, and electrical drawings; freehand sketching of construction details and sections; computer aided construction drafting. (3 credits) spring

CONM1600 HEAVY CONSTRUCTION EQUIPMENT
Study of current methods and equipment used in heavy construction projects, including highways, tunnels, bridges, dams, storm drains, and sanitary sewers. (3 credits) spring

CONM2000 CONSTRUCTION SURVEYING
Instruction is given in the theory and techniques of horizontal and vertical measurements. Laboratory exercises will focus on the application of these techniques as they relate to the building industry including construction layout and grades. Prerequisites: MATH1000 (4 credits) fall

CONM2100 STATICS & STRENGTH MATERIALS
This course covers the fundamental concepts of structural static; forces, moments, equilibrium, support conditions, and free body diagrams; and the fundamentals of strength of materials: properties, stress, strain, shear, bending, and torsion. Prerequisites: MATH1500 and PHYS1000 (4 credits) fall

CONM2200 ESTIMATING
Topics include the basic manual and computer-aided skills for estimating a variety of projects and developing takeoffs for all trades. Prerequisites: CONM1500 (4 credits) fall

CONM2500 BUILDING SYSTEMS
Building Systems is an introduction to the design, construction and start-up of building systems including mechanical, electrical and life safety systems. In particular, it covers the elements of these systems as they relate to the realm of the construction manager. The course provides basic design concepts and code requirements for a variety of systems, including: plumbing, heating, ventilation and air conditioning, fire protection, electrical distribution, lighting, low voltage, and building management control (BMS). It also provides information on systems testing and start-up. (4 credits) spring

CONM2600 WOOD & STEEL ANALYSIS & DESIGN
This course covers the properties of wood and steel products used in construction. The basic design principles for timber and steel structures are covered including connections, beams, columns, trusses, and frames. Prerequisite: CONM2100 (3 credits) fall

CONM3000 MATERIALS TESTING & QUALITY CONTROLS
Aggregate, concrete, asphalt, wood, and masonry are tested using ASTM procedures to establish design criteria, inspection and quality control programs. (4 credits) fall

CONM3100 CONSTRUCTION PROJECT MANAGEMENT
Topics include Construction Project Delivery Types, and Construction Project Management in the Pre-Construction, Construction and Post Construction Phases. Prerequisite: CONM2200 (4 credits) fall

CONM3201 CONSTRUCTION PROJECT SCHEDULING
Topic items include project network planning, scheduling and cost control models. Computer applications for generating Gantt charts and CPM will be explored by students. Prerequisite: CONM1500 (4 credits) fall

CONM3500 ADVANCED ESTIMATING & BID ANALYSIS
Detailed cost estimates including quantity takeoffs, labor/material pricing, overhead/profit. Also, included are the preparation of preliminary budgets; factors affecting construction cost, bid strategies and computer applications are explored. Prerequisite: CONM2200 (4 credits) summer

CONM3600 CONCRETE ANALYSIS & DESIGN
This course covers topics related to the analysis and design of reinforced concrete structures including beams, columns, slabs, footings and retaining walls. Prerequisite: CONM2100 (4 credits) summer

CONM3800 SPECIAL TOPICS IN CONSTRUCTION MANAGEMENT
Presents topics that are not covered by existing courses and are likely to change from semester to semester. Refer to the Class Schedule for a specific semester for details of offerings for the semester. (1 - 4 credits) summer

CONM4000 CONSTRUCTION PROJECT CONTROL
Examines the activities involved in the effective management of single and multiple construction projects including basic control theory, the preparation of control models, the collection of actual production data, and the corresponding computation of project performance. Prerequisites: CONM2200 and CONM3201 (3 credits) spring

CONM4100 CONSTRUCTION BUSINESS & FINANCE
Topics include construction financing during all phases of project development involving permanent loans, construction loans, sources of mortgage funds and venture capital, and tax and interest considerations. Prerequisite: MGMT2700 (4 credits) spring

CONM4200 CONSTRUCTION SAFETY & RISK MANAGEMENT
Topics include the knowledge and skills required to effectively manage safety compliance and risks associated with construction. This course satisfies the OSHA 30-hour training requirement for graduation. (3 credits) spring

CONM4650 BUSINESS, CONSTRUCTION LAW & GOVERNMENT REGULATIONS
This course introduces business law and relationships, construction contracts, and the contractual relationships commonly established between owner/real estate developer, designer, builder and construction manager. Prerequisite: Senior Status (3 credits) summer

CONM5500 SENIOR PROJECT CONSTRUCTION MANAGEMENT
Students have the opportunity to explore a subject in construction management of their own choice and to present it. A final oral presentation is required. Prerequisite: Completion of preceding 7 semesters of BSCM program and Senior status (4 credits) summer
CONM7000  EXECUTIVE MANAGEMENT FOR CONSTRUCTION MANAGEMENT
This course covers the management of a design and construction office and dealing with challenges of change, culture, diversity, portfolio management, project management, strategic management and other elements that influence the management process. This course also covers leadership, authority and decision making, and ethics concepts as systems-thinking ways of winning desired cooperation from associates, customers and the construction project participants. The use of case studies and analysis to develop a deeper understanding of executive management in a construction organization is emphasized. Corequisite: TCRM7000 (3 credits) fall

CONM7050  RESEARCH METHODOLOGY FOR CONSTRUCTION MANAGEMENT
This course will guide each student in the understanding and development of research, research tools, proposal writing, and research reports. Emphasis is placed on research planning and design. Topics to be covered range from the Review of Literature through qualitative and quantitative research methodologies. Special attention will be devoted to defining research problems in construction science or construction management and the development of research papers. Upon completion of this course, students will be able to: Demonstrate an understanding of the scientific approach to a research project; Demonstrate knowledge of the variety research tools used in scientific research; Examine "real world" construction science or management problems and develop research methodologies to define and understand them; Demonstrate knowledge of the available quantitative research methodologies; Demonstrate an understanding of how to write a research proposal; Specify the assumptions and limitations implicit in using these techniques, and explain the effect they have on the validity of the results obtained. (3 credits) spring

CONM7100  MODERN CONSTRUCTION DELIVERY METHODS
This course will expose students to current Architecture-Engineering-Construction (AEC) industry practices that are used to finance and manage the design and construction of capital facilities. It will investigate as well as differentiate recent trends in project contracting, organization, and production management. (3 credits) summer

CONM7200  CONSTRUCTION LAW
This course will provide a focused study of the key legal concepts and considerations encountered in the construction industry. The course shall include the student and analysis of: industry standard construction contract forms and documents, contractual relationships on a construction project, risk allocation among the parties to a construction project, the procurement and contract formation issues arising on construction projects (public v. private considerations), claims and changes (for time and compensation), and alternative dispute resolution. (3 credits) fall

CONM7250  CONFLICT RESOLUTION & NEGOTIATION FOR CONSTRUCTION MANAGEMENT
The course reviews the theoretical basis and practical application of traditional and evolving methods of dispute avoidance, mitigation and resolution within the construction industry. The class will cover key strategies, styles, and tactics involved in negotiating typical construction industry transactions, as well as alternative project delivery methods and partnering. The class will also address the negotiation of construction disputes and the resolution of disputes using third parties. Traditional litigation and all forms of alternative dispute resolution will be examined. (3 credits) Spring

CONM7300  REAL ESTATE DEVELOPMENT
Introduce elements, players and processes associated with real estate development. Emphasis placed on understanding the real estate development process from the perspective of each of the major players. Topics to be covered include the developer's role, the relationship between owner/developer, architect and contractor, legal issues, and the perspective of lenders and investor partners. (3 credits) fall

CONM7400  ADVANCED PROJECT CONTROLS
This course covers the construction project controls necessary to be an effective project manager. Several key aspects of construction projects, such as construction contracts, cost estimation, planning and scheduling, equipment costs and productivity, construction control and monitoring, and risk management are discussed. (3 credits) spring

CONM7500  INTERNATIONAL CONSTRUCTION
A detailed introduction to the key elements of the international construction markets is covered, with emphasis on strategic elements having the most effect on project scopes, schedules and budgets. (3 credits) spring

CONM7800  GRADUATE SPECIAL TOPICS IN CONSTRUCTION MANAGEMENT
Presents topics that are not covered by existing courses and are likely to change from semester to semester. Refer to the Class Schedule for a specific semester for details of offerings for the semester. (4 credits)

CONM8000  CAPSTONE PROJECT IN CONSTRUCTION MANAGEMENT
This course will guide each student in the development of an individual research topic. It integrates applied classroom and current industry practice and knowledge through observation and interpretation of realistic construction management issues. (3 credits) spring

CONM8900  CONSTRUCTION MANAGEMENT THESIS
The MS in Construction Management program offers an optional thesis for students who are considering doctoral-level study in the field. Prerequisite: CONM7050 (3 credits)