

## Construction Management

College of Science, Engineering & Technology  
Department of Construction Management  
354 Wiecking Center 507-389-6385  
www.MankatoConstructionDegree.com

**Construction Management Major.** The Construction Management major prepares graduates for success in the rapidly changing construction industry. Course work emphasizes management with an additional focus on technology and systems specific to the construction industry. Typical entry-level positions include field manager, assistant superintendent, project engineer, scheduler, assistant estimator, project cost controller and safety director.

Admission to Major is granted by the College of Science, Engineering and Technology. Admission requirements are:

- A minimum of 32 earned semester credit hours
- Overall GPA of "C" 2.0
- Completion of CM 111 "C" (2.0)
- Completion of ENG 101, grade of "C" (2.0) or above
- Completion of MATH 112 & MATH 113 or MATH 115, grade of "C" (2.0) or above

Contact the CSET Advising Center for application procedures.

### POLICIES/INFORMATION

**Completion of CPC Exam.** All students are required to sit for the "Certified Professional Constructor Exam" prior to graduation.

**GPA Policy.** A minimum grade of "C" (2.0) is required in all courses listed in the Construction Management BS Degree.

**P/N Grading Policy.** All courses in the major must be taken for letter grade except where P/N is the only option.

### CONSTRUCTION MANAGEMENT BS

#### Required General Education

ECON	201	Principles of Macroeconomics (3)
ECON	202	Principles of Microeconomics (3)
ENG	101	Composition (4)
MATH	115	Precalculus Mathematics (4)
STAT	154	Elementary Statistics (3)
<u>Lab Based Science Courses</u> (8 credits)		
(Choose 3-4 credits)		
PHYS	101	Introductory Physics (3)
PHYS	211	Principles of Physics I (4)
(Choose Remaining 4-5 credits)		
CHEM	201	General Chemistry I (5)
GEOL	100	Our Geologic Environment (4)

#### Major Common Core

ACCT	200	Financial Accounting (3)
ACCT	210	Managerial Accounting (3)
BLAW	200	Legal, Political, and Regulatory Environment of Business (3)
BLAW	476	Construction and Design Law (3)
CM	111	Introduction to Construction Management (1)
CM	120	Construction Graphics (3)
CM	130	Construction Documents (2)
CM	210	Construction Materials and Methods I (3)
CM	220	Construction Materials and Methods II (3)
CM	222	Introduction to Statics and Mechanics of Materials (3)

CM	271	Civil Engineering Measurements (2)
CM	297	Construction Professional Practice (1)
CM	300	Construction Safety (3)
CM	310	Estimating I (3)
CM	330	Planning and Scheduling (3)
CM	350	Mechanical and Electrical Systems (3)
CM	390	Structural Analysis and Design (3)
CM	410	Estimating II (3)
CM	440	Project Management (3)
CM	450	Construction Capstone Project (3)
CM	492	Construction Management Seminar (3)
CM	497	Internship (3)
ENG	271W	Technical Communication (4)
IT	101	Introduction to Information Systems (3)
MGMT	200	Introduction to MIS (3)
MGMT	330	Principles of Management (3)

#### Major Restricted Electives

Select one of two classes (3 credits)

FINA	362	Business Finance (3)
MRKT	310	Principles of Marketing (3)

**Required Minor: None.**

### COURSE DESCRIPTIONS

#### CM 111 (1) Introduction to Construction Management

Overview of academic preparation and career opportunities in the fields of: Construction Management. Skills needed for estimating, scheduling, project management and field supervision will be previewed with an emphasis on future trends in the industry.

#### CM 120 (3) Construction Graphics

Emphasis on plan reading, basic sketching and drawing techniques, graphic vocabulary, detail hierarchies, scale, content, notes and specifications, reference conventions, computer applications.

Fall, Spring

#### CM 130 (2) Construction Documents

Basic understanding of the plans and specifications for construction projects. Emphasis on interpretation of bidding and contractual documents, conditions of the contract, plans/working drawings; applications of existing and new technology preparing students for the future.

Fall, Spring

#### CM 210 (3) Construction Materials and Methods I

Understand how construction affects professional industry and society, present state of the profession and its future. Learn about the various materials used in construction—the composition, properties, standard designations, sizes, gradations and testing techniques. Understand changes in technology of building construction materials.

Pre: CM 111, CM 120, CM 130, IT 101

Fall, Spring

#### CM 220 (3) Construction Materials and Methods II

Fundamentals of building construction and their applications in construction systems and utilities. Application of the principles of building science to construction sites; relationship between technology and innovations in methods, sustainable building practices and "green" building requirements.

Pre: CM 210

Fall, Spring

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## CONSTRUCTION MANAGEMENT

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### **CM 222 (3) Introduction to Statics and Mechanics of Materials**

Course introduces the design theory and applied principles of force equilibrium, stress and strain, shear, bending moments, force diagrams, deformations of beams, and stress/strain analysis.

PHYS 101, MATH 113 or MATH 115 or MATH 121

Fall, Spring

### **CM 271 (2) Civil Engineering Measurements**

Basic civil engineering measurements as relates to construction layout, including distances, angles, bearings, elevations, mapping and positioning.

Pre: MATH 113 or MATH 115 or MATH 121

Fall, Spring

### **CM 297 (1) Construction Professional Practice**

Principles of professional conduct, ethical codes and best practices are applied to the development of a portfolio and presentation. Students will sit for interviews, set career goals and begin building a professional network.

Pre: CM 210

Fall, Spring

### **CM 300 (3) Construction Safety**

Principles and practices of construction safety, health and loss control. Emphasis is on hazard recognition, control procedures and management systems for measuring and evaluating loss control performance in the construction industry.

Pre: CM 210

Fall, Spring

### **CM 310 (3) Estimating I**

This course covers types of estimates and their uses, the basics of quantity take-off, labor and equipment productivity and basic computer applications.

Pre: MATH 113 or MATH 115 or MATH 121

### **CM 330 (3) Planning and Scheduling**

Understanding project planning, scheduling and control models with emphasis on the critical path methods. Introductions to the techniques used in the industry utilizing commercial software on personal computers, highlighting the importance of analysis of schedules; considering and understanding schedule alternatives will be stressed.

Pre: ENG 271W, CM 220

Fall, Spring

### **CM 350 (3) Mechanical and Electrical Systems for Construction**

Design concepts of plumbing, HVAC, and electrical and control systems are analyzed for attributes that affect the design and construction processes and the performance of completed structures.

Pre: CM 220

Fall, Spring

### **CM 390 (3) Structural Analysis and Design**

Structural analysis and design principles for construction managers, including different types of building loads and their effects upon the various materials used by architects and/or engineers. Analysis techniques will focus on structural members utilizing steel, wood and reinforced concrete materials.

Pre: CM 222 or MET 222

Fall, Spring

### **CM 410 (3) Estimating II**

This course covers types of estimates and their uses, pricing and price databases, labor and equipment productivity, proposal presentations, computer applications in estimating and research in sustainable construction.

Pre: CM 310, CM 330

Fall, Spring

### **CM 440 (3) Construction Project Management**

This course encompasses an overview of the operations of a firm relevant to project management and cost controls. The positions and roles of construction management personnel are identified and analyzed. The use of computers will be incorporated into the submittal and transmittal processes.

Pre: CM 300, CM 310, CM 330

Fall, Spring

### **CM 450 (3) Construction Capstone Project**

The course will involve the students in a Capstone Project in teams representing a construction company. This is a project where students will integrate the coursework concept of the core program through research, application and presentation.

Pre: CM 222, CM 350, CM 440

Fall, Spring

### **CM 492 (3) Construction Management Seminar**

A seminar course that involves a critical evaluation of an area in the construction management discipline and/or industry. Topics vary from year to year. Students are usually required to make a presentation to the class.

Pre: Senior Standing or instructor permission

Fall, Spring

### **CM 497 (1-12) Internship**

Pre: CM 310, CM 300

### **CM 499 (1-4) Individual Study**

An in-depth study on a topic of particular interest to the student. Project must be approved by project supervisor and department chairperson.