

CONSTRUCTION MANAGEMENT

The construction industry is one of the largest industries in the United States. It accounts for nearly 8 percent of the nation's gross national product and employs millions of people. The industry is divided into four sectors including residential building construction, industrial construction, commercial building construction, and heavy civil construction. The Department of Construction Management and Engineering provides quality educational programs that prepare nationally competitive undergraduate and graduate students for successful careers in the construction engineering and management professions.

The Program

Construction management is a combination of technology, construction techniques, and management to meet the needs of the rapidly growing construction industry. Construction management studies less math and engineering concepts than construction engineering, but focuses more on business related courses. The program is designed to prepare students for the art of achieving maximum profit by efficient use of people, machines, materials and other resources to complete a construction project on time and to the satisfaction of the owner. A meld of engineering, construction, management and business gives the student a background and understanding of a management point of view in the construction industry. The program leading to Bachelor of Science in Construction Management degree is accredited by the American Council for Construction Education (ACCE), www.acce-hq.org.

A minor in Business Administration offered by the College of Business is required for all B.S. in Construction Management students. Students are required to have a minimum cumulative GPA of 2.50 to be admitted into the minor program. A minor in business administration requires a minimum GPA of 2.50 in the courses that satisfy the minor. In addition, a cumulative GPA of 2.50 overall is required to graduate with a Bachelor of Science in Construction Management degree.

Program Objectives

1. Provide construction students the basic skills necessary to plan, organize, and control resources to manage the overall construction process.
2. Provide construction students the technical knowledge and problem-solving skills for a career in construction.
3. Provide construction students the knowledge and skills necessary to identify, define, and compare design alternatives.
4. Provide construction students the necessary communication skills for the successful practice of the construction profession. Provide construction students the professional opportunities and skills to pursue lifelong learning within the broader societal context of the construction profession.

The Program Objectives support the department goals defined in the strategic plan that relates to the undergraduate program and are further connected to the Program Learning Outcomes.

Student Learning Outcomes

The Construction Management program has adopted the 20 Student Learning Outcomes (SLOs) defined by ACCE as its Student Learning Outcomes. Upon graduation from the Construction Management program, graduates shall be able to:

1. Create written communications appropriate to the construction discipline.
2. Create oral presentations appropriate to the construction discipline.
3. Create a construction project safety plan.
4. Create construction project cost estimates.
5. Create construction project schedules.
6. Analyze professional decisions based on ethical principles.
7. Analyze construction documents for planning and management of construction processes.
8. Analyze the methods, materials, and equipment used to construct projects.

9. Apply construction management skills as a member of a multi-disciplinary team.
10. Apply electronic-based technology to manage the construction process.
11. Apply basic surveying techniques for construction layout and control.
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13. Understand construction risk management.
14. Understand construction accounting and cost control.
15. Understand construction quality assurance and control.
16. Understand construction project control processes.
17. Understand the legal implications of the contract, common, and regulatory law to manage a construction project.
18. Understand the basic principles of sustainable construction.
19. Understand the basic principles of structural behavior.
20. Understand the basic principles of mechanical, electrical and piping systems.

Faculty and Staff

The Department of Construction Management and Engineering has a group of faculty and staff members dedicated to teaching, advising and career consultation. All full-time faculty members have doctoral degrees. Many of them have professional licenses such as the Professional Engineer (PE) and/or the Certified Professional Constructor (CPC), and have construction related working experiences both in the United States and overseas. Additionally, the department has many Adjunct professors who are currently working in the construction industry in supervisory roles.

Facilities

The Department of Construction Management and Engineering has well equipped classrooms, computer labs and teaching and research labs for its students. Classrooms used by the department are equipped with a computer, a Blackboard course management system, Internet access, a projector, a document camera, and an apple TV/AirMedia system. In addition, the department maintains a computer lab, a virtual reality lab, a concrete lab and a soils lab and shares laboratory space with the Department of Civil Engineering for the structural, geotechnical and surveying labs. The department has the most updated modern teaching and research equipment such as GPS units, robotic total stations, drones, etc.

Career Opportunities

Construction management graduates are in high demand after graduation by contractors in all types of construction, from general contractors to specialty contractors. Positions available include superintendent, project manager, and construction executive. Starting salary has been between \$50,000 and \$80,000 in the recent years. Summer internships or employment in the construction industry is also available to construction management students.

Student Organizations

There are four student organizations in the Department of Construction Management and Engineering: Associated General Contractors of America (AGC), National Association of Home Builders (NAHB), Sigma Lambda Chi (SLC), and Student Advisory Board (SAB). AGC Student Chapter competes each year at the Associated Schools of Construction Competition and the Midwest Construction Quiz Bowl. NAHB Student Chapter competes each year at the Residential Construction Management Competition. SLC is an international construction honor society. SAB provides advising and best practices to first year freshmen, and provides student feedback to the program.

Industry Advisory Council

The Industry Advisory Council (IAC) consists of 35 members who specialize in different sectors throughout the construction industry. The IAC helps the program develop the professional body of knowledge appropriate to construction management and engineering. They serve as a liaison between the construction industry and the Department. They advance and support the highest quality faculty, and educational facilities for the student enrolled in the programs. Through active participation, the IAC offers advice, counsel, and provides industry's vision for the program

Scholarship Opportunities

The AGC of North Dakota, the Home Builders Care Foundation (a charitable arm of the Home Builders Association of Fargo-Moorhead), and the NAHB offer annual scholarships to outstanding freshmen and upper class students. In addition, many other scholarships, such as Interstates Construction Management and Engineering Scholarship and J.L. McCormick Memorial Trust Scholarship, are available to students. Students can contact the Office of Admission for more information or check the department website at www.ndsu.edu/construction/current_students/scholarships/.

Construction Management Plan of Study

Please note this is a sample plan of study and not an official curriculum. Actual student schedules for each semester will vary depending on start year, education goals, applicable transfer credit, and course availability. Students are encouraged to work with their academic advisor on a regular basis to review degree progress and customize an individual plan of study.

Freshman			
Fall	Credits	Spring	Credits
CM&E 111 Intro to Construction Management and Engineering	1	CM&E 212 Construction Graphic Communications	3
CM&E 200 Construction Documents and Codes	3	ENGL 120 College Composition II	3
ENGL 110 College Composition I	4	MATH 146 Applied Calculus I	4
MATH 105 Trigonometry or 107 Precalculus##	3	COMM 110 Fundamentals of Public Speaking	3
CHEM 121 General Chemistry I	3	Economics***	3
CHEM 121L General Chemistry I Laboratory	1	Gen Ed Social & Behavioral Sciences	3
	15		19
Sophomore			
Fall	Credits	Spring	Credits
CM&E 204 Construction Surveying	3	CM&E 203 Building Construction: Methods and Materials	3
CM&E 250 Construction Statics and Mechanics	3	CM&E 240 Financial Cost Concepts for Construction Managers	3
PHYS 211 College Physics I	3	CM&E 260 Soils and Foundations	3
PHYS 211L College Physics I Laboratory	1	Gen Ed Humanities & Fine Arts	3
GEOL 105 Physical Geology	3	Gen Ed Humanities & Fine Arts/Gen Ed Cultural Diversity	3
ACCT 102 Fundamentals of Accounting	3		
	16		15
Junior			
Fall	Credits	Spring	Credits
CM&E 305 Pre-Construction Management	3	CM&E 301 Construction Technology and Equipment	3
CM&E 380 Construction Estimating: Quantities and Costs	3	CM&E 315 Specifications and Contracts	3
STAT 330 Introductory Statistics	3	CM&E 405 Construction Support Operations	3
ENGL 320 Business and Professional Writing or 321 Writing in the Technical Professions	3	BUSN 431 Business Law I-Contracts, Property and Torts**	3
MGMT 320 Foundations of Management**	3	MRKT 320 Foundations of Marketing or FIN 320 Principles of Finance**	3
	15		15
Senior			
Fall	Credits	Spring	Credits
CM&E 403 Scheduling and Project Control	3	CM&E 488 Construction Management Capstone	3
CM&E 421 Electrical and Mechanical Construction	3	CM&E 453 Concrete Design and Construction	3
CM&E 431 Sustainable Design and Construction	3	Gen Ed Wellness	2
CM&E 450 Steel Design and Construction	3	Business Admin Minor 300/400 Elective**	3
Business Admin Minor 300/400 Elective**	3	Business Admin Minor 300/400 Elective**	3
	15		14
Total Credits: 124			

Note: An overall minimum CGPA of 2.50 and a minor in Business Administration with a minor GPA of 2.50 are required to graduate with a B.S. in Construction Management

Possibly waived based on Math Placement

* All science courses require the companion lab with the exception of geology.

** To be eligible for enrollment into 300/400 level courses offered by the College of Business requires an application for a minor in Business Administration (BA).

*** To satisfy the Gen Ed Category B, a student can choose between two options: ECON 105 plus an additional course within Category B OR ECON 201 and ECON 202. Both options satisfy the Gen Ed Category G requirements and the requirements for the Business Administration minor.

View NDSU equivalencies of transfer courses at: www.ndsu.edu/transfer/equivalencies

For Further Information

MAILING ADDRESS: Construction Management and Engineering | NDSU Dept 2475 | PO Box 6050 | Fargo, ND 58108-6050

DEPT LOCATION: Engineering Bldg 106

DEPT PHONE: (701) 231-6202

DEPT WEBSITE: www.ndsu.edu/construction/

This publication will be made available in alternative formats upon request. Contact the Office of Admission (701) 231-8643 or 800-488-NDSU or ND Telecommunications Relay Service 800-366-6888 (TTY) or 800-366-6889 (voice).