

Construction Management

Department Information

- **Department Location:**
Engineering Bldg 106
- **Department Phone:**
701-231-6202
- **Department Web Site:**
www.ndsu.edu/construction/ (<http://www.ndsu.edu/construction/>)
- **Credential Offered:**
B.S.Cons.M.
- **Official Program Curriculum:**
bulletin.ndsu.edu/undergraduate/program-curriculum/construction-management/ (<http://bulletin.ndsu.edu/undergraduate/program-curriculum/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), <http://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 necessary communication skills for the successful practice of the construction profession.
5. 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 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 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 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 nationally and internationally. Additionally, the department has many Adjunct professors who are currently working in the construction industry in supervisory roles.

4+1 PROGRAM

The BSCM + MCM (4+1) program provide the opportunities for current students in the Construction Management program to pursue the Master of Construction Management (MCM) offered by the department. Students in the Construction Management program have an option to obtain a Master degree through the 4+1 accelerated BSCM + MCM program, which requires at least a total of 30 semester credits. Up to 9 credits (three courses) from the Construction Management BS program can be double counted to the MCM program. However, these courses must be taken in the 600 or 700 level. In that sense, the interested students could accelerate the master study by shortening three courses, so that they could complete the remaining 21 credits plus the completion of the master thesis and graduate in one year, while the total and design credit requirements for the technical elective courses stay the same for the Construction Management BS degree.

A separate application to the 4+1 programs is required. Applicants could apply their admissions at their junior year (having accumulated more than 60 credits) with an average accumulative GPA above 3.5. The review procedure for applications will follow the existing policy of master graduate student admissions.

Application procedure:

- Interested and eligible students must submit a Combined/Accelerated Program Degree Program Declaration form to the department office at <https://www.ndsu.edu/fileadmin/registrar/forms/accelerated.pdf>.
- Next, the student's academic advisor will evaluate the substitution of the graduate level courses into the undergraduate program, followed by the final review and approval from the Department Chair. A maximum of 9 graduate student credits* may be applied to the undergraduate degree.
- After receiving the necessary approvals noted above, the student will submit this form to the Graduate College and formally apply for admission to the graduate program.
- All admissions to the Graduate College will be conditional. The minimum condition is completion of the bachelor's degree prior to full standing in master's program, and maintaining a 3.0 cumulative GPA in their graduate classes.
- No undergraduate course may be counted toward a master's degree.
- Students entering the master's degree with a bachelor's degree in hand may not use courses earned as part of the bachelor's program for master's requirements, even if those courses were graduate level courses.
- Students must meet all of the requirements that would ordinarily be expected of those enrolled in the MCM program.

The graduate-level courses** that can be taken:

- CM&E 605: Construction Support Operations (instead of CM&E 405: Construction Support Operations)
- CM&E 603: Scheduling and Project Control (instead of CM&E 403: Scheduling and Project Control)
- CM&E 715: Construction Specifications and Contracts (instead of CM&E 315: Specifications and Contracts)

* Graduate tuition will be assessed for graduate credits approved for double-counting toward requirements for both undergraduate and graduate programs of study. Double-counted graduate credits count toward totals for financial aid, but are not covered under the tuition cap. Mandatory Student fees, however, are capped at 12 credits, regardless of program.

** Note: A substitution form is required for the 600/700-level courses to officially apply to the BS degree. This is submitted after they have enrolled in the class(es).

FACILITIES

The Department 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 Civil Engineering Program for the structural 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.

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.

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.

SCHOLARSHIP OPPORTUNITIES

The AGC of North Dakota and the Fargo/Moorhead Home Builders Care Foundation (a charitable arm of the Home Builders Association of Fargo-Moorhead) offer annual scholarships to incoming freshman and outstanding existing students. In addition, many other scholarships, such as Cossette Construction Management and Engineering Scholarship, Excellence in Construction Safety Scholarship and Interstates Construction Management and Engineering Scholarship, are available to students. Students can contact the Office of Admission for more information or check the department website at https://www.ndsu.edu/construction/current_students/scholarships/.

Sample Program Guide

Please note this is a sample program guide 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. Once admitted, students are encouraged to work with their assigned academic advisor on a regular basis to review degree progress.

Freshman			
Fall	Credits	Spring	Credits
CM&E 111		1 CM&E 212	3
CM&E 200		3 ENGL 120 (Gen Ed C Category)	3
ENGL 110 (Gen Ed C Category)		3 MATH 146 (Gen Ed R Category) [#]	4
MATH 105 or 107		3 COMM 110 (Gen Ed C Category)	3
CHEM 121 (Gen Ed S Category) [*]		3 Economics (Gen Ed B/G Category) ^{***}	3
CHEM 121L (Gen Ed L Category) [*]		1 Social Behavior Elective (Gen Ed B Category)	3
		14	19
Sophomore			
Fall	Credits	Spring	Credits
CM&E 204		3 CM&E 203	3
CM&E 250		3 CM&E 240	3

PHYS 211 (Gene Ed S Category)*	3	CM&E 260	3
PHYS 211L (Gene Ed L Category)*	1	Humanities (Gen Ed A Category)	3
GEOL 105 (Gene Ed S/G Category)	3	Humanities & Diversity (Gen Ed A&D Category)	3
ACCT 102	3		
	16		15
Junior			
Fall	Credits	Spring	Credits
CM&E 305		3 CM&E 301	3
CM&E 380		3 CM&E 315	3
STAT 330		3 CM&E 405	3
ENGL 320 or 321 (Gen Ed C Category)		3 BUSN 431**	3
MGMT 320**		3 MRKT 320 or FIN 320**	3
		15	15
Senior			
Fall	Credits	Spring	Credits
CM&E 403		3 CM&E 450	3
CM&E 421		3 CM&E 453	3
CM&E 431		3 CM&E 488	3
Wellness (Gen Ed W Category)		Business Admin Minor 300/400 Elective**	3
Business Admin Minor 300/400 Elective**		3 Business Admin Minor 300/400 Elective**	3
		12	15

Total Credits: 121

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.

*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 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.

Gen Ed Category description can be found on the General Education page (<http://catalog.ndsu.edu/academic-policies/undergraduate-policies/general-education/>).