Who We Are

The first construction degree program at North Dakota State University (NDSU) was approved in 1969 by the North Dakota Board of Higher Education with the support of the Associated General Contractors (AGC) of North Dakota. Students began to be enrolled in the program in the fall semester of 1970. There are two bachelor programs and three graduate programs in the Department of Construction Management and Engineering (CM&E). Detailed information can be found at the department website. Application for any of the graduate programs can be submitted online at www.ndsu.edu/gradschool/.

Department Laboratories

- Computational and Sustainable Infrastructure Laboratory (CSI Lab)
- Concrete Materials and Performance (CMP) Laboratory
- Emerging Technologies for Sustainable Infrastructure Laboratory
- Immersive Virtual Design and Construction (iVDC) Laboratory
- Soil and Highway Materials Laboratory

Financial Assistance

Various types of financial assistance are available to graduate students. For exceptional applicants, the CM&E Department may offer a graduate assistantship which consists of a monetary stipend and a possible tuition waiver; however, student activity fees and program fees are not waived. There is no separate application process for graduate assistantships. Applicants are evaluated based on their credentials and/or experience.

CM&E Graduate Faculty

Eric Asa, Ph.D.
Associate Professor
Infrastructure and assets management, construction materials, computational modeling, and engineering education

Yong Bai, Ph.D., P.E., F.ASCE
Chair and Professor
Infrastructure construction and maintenance, highway work zone safety, international construction management, and emerging technologies in construction

Bradley Bowen, Ed.D.
Assistant Professor
Engineering education, K-12 engineering, and project-based learning

Zhili "Jerry" Gao, Ph.D., P.E., CPC
Associate Professor
Virtual design and construction including visualization and BIM development and implantation and advanced concrete techniques including sustainable concrete and new concrete materials and structures

Charles McIntyre, Ph.D., F.ASEE
Associate Professor
Sustainable construction and engineering, construction and engineering education

Todd L. Sirotiak, Ph.D., P.E., CPC, LEED-AP, MBA
Associate Professor
Cost control, scheduling, management, concrete, sustainability, entrepreneurship, disruptive technologies, and engineering education

Gary R. Smith, Ph.D., P.E.
Dean and Professor
Quality control and system applications, decision analysis and modeling techniques, safety performance measurement and improvements, and process and productivity improvement

Jongchul Song, Ph.D.
Assistant Professor
Asphalt pavement construction and energy efficiency of buildings

Matthew L. Stone, Ph.D.
Assistant Professor
Cost estimating, life cycle analysis, and infrastructure construction

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Graduate Programs

Graduate Certificate Program

The Program of Graduate Certificate in Construction Management provides an on-line course learning experience within the areas of estimating, scheduling, and project management at the graduate level. These three areas represent the fundamental core of construction management. The Graduate Certificate in Construction Management Program consists of eleven credits encompassing the following three (3) courses: CM&E 603 - Scheduling and Project Control; CM&E 611 - Construction Cost Estimating; and CM&E 612 - Construction Management. This Program is administered through the Distance and Continuing Education at NDSU.

Master of Construction Management Program

The Master of Construction Management is an on-line professional program consisting of 30 credits of coursework and the Associate Constructor (AC) Exam. Details about coursework and the AC Exam can be found at the department website. The Master of Construction Management is administered through Distance and Continuing Education at NDSU.

Master of Science in Construction Management Program

The Master of Science in Construction Management is an on-campus research-focused degree. It requires a total of 31 graduate-level credits (24 credits of coursework, 6 credits of research/thesis, and 1 credit of seminar) and a thesis. The thesis requires the creation and presentation of new knowledge in providing a solution to a problem. Students are expected to significantly contribute to the development and delivery of scholarly publications and to the development and submission of research grant proposals as determined by the major advisor.

Basic Requirements

To be admitted into these graduate programs, applicants must:

1. Have earned a baccalaureate degree in construction, engineering, architecture, or other related discipline with a minimum CGPA of 3.0 or equivalent to attain full standing.
2. Submit an official transcript.
3. Submit a two-page resume.
4. Submit three (3) three letters of recommendation.

Applicants who are deficient in the CGPA requirement are encouraged to apply for the Graduate Certificate in Construction Management Program. Although successful completion of the Graduate Certificate does not guarantee acceptance into the Master of Construction Management, the Graduate Certificate will be seriously considered in application decisions related to the Master of Construction Management.

Additional Requirements

Applicants must also meet the following additional requirements for the program they are applying for.

Graduate Certificate Program: Submit a one-page “Statement of Purpose” outlining reasons for pursuing the Graduate Certificate in Construction Management.

Master of Construction Management Program: Submit a one-page “Statement of Purpose” outlining reasons for pursuing the Master of Construction Management degree.

Master of Science in Construction Management Program: Take the Graduate Record Examination (GRE) and submit a one-page “Statement of Research Objectives and Qualifications” that directly relates to one of the research interests of the CM&E faculty.

International applicants who apply for any of the graduate programs must meet the minimum requirements on measures of general English language proficiency if their first language is not English and they do not possess a U.S. bachelor’s degree or higher. The accepted measures of language proficiency can be found at the department website.

Ph.D. Program

All CM&E faculty members can supervise Ph.D. students in Civil Engineering with an emphasis on construction engineering and management. Prospective students who are interested in a Ph.D. in construction engineering and management can apply for admission through the Department of Civil Engineering. When students apply for Ph.D. admission, please contact CM&E faculty members for available teaching assistantship and/or research assistantship.

Examples of Research Projects

Faculty members are conducting a wide variety of research projects. Below are some examples.

Construction Efficiency

Developing the wireless real-time monitoring system to measure the efficiency of highway construction.

Rapid Bridge Replacement

Developing the human pose analyzing algorithms using the artificial neural networks to measure the on-site construction labor productivity with the purpose of speeding up the bridge replacement operations.

Competitiveness Study

Utilizing the time study method to compare the on-site construction labor productivity between the U.S. and China. The results of the comparison study can be used to enhance U.S. construction firms’ competitiveness in the Chinese market.

Improving Work Zone Safety

Developing vehicle speed profile models, determining the optimal deployment locations of a portable changeable message sign (PCMS), and evaluating the effectiveness of the graphic-aided PCSMs in the upstream of highway work zones with the purpose of improving safety.

Pavement Construction Quality Control

Real-time temperature monitoring, temperature-density relation of asphalt pavement, cooling rates of hot mix and warm mix asphalt overlays, and field estimation techniques of asphalt thermal properties.

Prediction of Concrete Pavement Strength Development

Using Finite Element Modeling Laboratory (FEMLAB) model to predict pavement strength development and consequently the pavement joint-sawing and opening times.

Project Time and Cost Control Using BIM

Studying how to improve project management process using Building Information Modeling (BIM) techniques.

Optimizing Building Energy Performance Using BIM

Exploring BIM technology to optimize building energy efficient design and to visualize the performance parameters.