# CONSTRUCTION MANAGEMENT

## ASSOCIATE OF APPLIED SCIENCE (AAS) – 60 CREDITS

## About this program

The Construction Management program prepares graduates for a variety of careers in the construction industry, including management, supervision, estimating, testing and safety. The program focuses on the coordination of labor, building materials, equipment, time and finances, from project conception through completion. Students gain a combination of skills in construction, business and management, preparing them for leadership roles in the field. This degree also allows students to continue their education in a baccalaureate program at participating four-year institutions.

## Program outcomes

1. Demonstrate skills in the management of time and finances using construction management principles.
2. Accurately prepare estimates and project schedules.
3. Manage Occupational Safety and Health Administration (OSHA) safety programs.
4. Demonstrate proficiency in the development and interpretation of construction drawings and specifications.
5. Apply construction jobsite management skills.
6. Prepare construction working drawings using various software applications.

## Curriculum overview

| Crds | Requirement type |
|---|---|
| 48 | Required courses |
| 9 | Restricted electives in courses |
| 3 | Restricted electives in course types |
| 60 | **Total** |

**Developmental courses note:** A student may be required to enroll in developmental courses in reading, writing and math. A student's scores on the Accuplacer assessment will determine enrollment in developmental courses. The purpose of developmental courses is to prepare students for the demands of a college-level curriculum. *Credits may vary.*

**Accreditation:** Minnesota State Community and Technical College is accredited by the Higher Learning Commission, a regional accreditation agency recognized by the U.S. Department of Education. The Higher Learning Commission 230 South LaSalle Street, Suite 7-500 Chicago, IL 60604-1411 http://www.ncahigherlearningcommission.org Phone: 312.263.0456 / 800.621.7440

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# Curriculum requirement details

## Required courses

| Course | Crds |
|---|---|
| BUS2204 - Principles of Management | 3 |
| CADD1000 - AutoCAD Basics | 3 |
| CONM1101 - Construction Documents and Codes | 3 |
| CONM1102 - Site/Building Layout | 2 |
| CONM1104 - Construction Management Principles | 2 |
| CONM1108 - Principles of Estimating | 4 |
| CONM1124 - Building Systems | 3 |
| CONM2204 - Materials Testing | 3 |
| CONM2210 - Construction Scheduling | 3 |
| CONM2212 - Site Management | 3 |
| CONM2213 - Safety Management | 2 |
| CONM2217 - Computer Estimating and Bidding | 3 |
| CONM2222 - Construction Management Internship | 2 |
| ENGL1101 - College Writing | 3 |
| ENGL1215 - Writing for the Workplace | 3 |
| ENGT1118 - Construction and Manufacturing Math | 3 |
| ENGT1126 - Engineering Graphics | 3 |

## Other requirements or restricted electives

**3 credits from one or more of these Courses:**

| Course title | Credits |
|---|---|
| BUS1100 - Business Computers | 3 |
| ENGT1100 - Introduction to Building Information Modeling | 3 |

**3 credits from one or more of these Courses:**

| Course title | Credits |
|---|---|
| ECON2210 - Macroeconomics | 3 |
| ECON2222 - Microeconomics | 3 |

**3 credits from one or more of these Courses:**

| Course title | Credits |
|---|---|
| COMM1120 - Introduction to Public Speaking | 3 |
| COMM1130 - Small Group Communication | 3 |

**3 credits from these Course Types:**

- General Education w/MnTC Goals

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# Course summaries

**BUS2204 - Principles of Management** ..... ***(3 credits)***
This course examines the historical and philosophical foundations of management as well as current theory and practices. Managerial decisions as a planner, organizer, motivator, controller and leader of a diverse workforce in a competitive environment are identified and evaluated. The course is a study of the basic principles of business management, including the functional, scientific, behavioral and systems approaches along with the role of projects in contemporary organizations. Current literature, concepts, models and applications may be included as well as the use of case studies.

**CADD1000 - AutoCAD Basics** ..... ***(3 credits)***
This course provides the fundamentals of computer-aided drafting (CAD) using the latest version of the AutoCAD drafting software. The course develops the CAD skills necessary to design and print complex two-dimensional drawings and sheet sets.

**CONM1101 - Construction Documents and Codes** ..... ***(3 credits)***
This course provides an introduction to understanding construction drawings, specifications, processes and building codes.

**CONM1102 - Site/Building Layout** ..... ***(2 credits)***
This course provides the student with the basic knowledge and hands-on skills necessary to lay out a building site and establish elevations for construction.

**CONM1104 - Construction Management Principles** ..... ***(2 credits)***
This course provides an overview of the construction management industry and introduces the students to the duties and responsibilities of the construction professional. The emphasis of this course will be on the importance of the industry, the industry's impact and responsibilities to society, and career opportunities for successful students.

**CONM1108 - Principles of Estimating** ..... ***(4 credits)***
This course focuses on the basics of material, labor and equipment estimating. Students learn to calculate the quantities of material comprising a project. These quantities determine the primary portion of the direct costs used in a construction bid. This process is the first step in completing accurate bids for construction projects of all sizes.

***Prerequisites:***

- BLDG1114

OR

- ARCH1126

OR

- CONM1101

**CONM1124 - Building Systems** ..... ***(3 credits)***
This course is a comprehensive treatment of the various techniques, systems and methodologies utilized in the construction industry and will help the student prepare for the responsibilities of supervision on a modern construction project.

**CONM2204 - Materials Testing** ..... ***(3 credits)***
This course covers inspection techniques, methods of material measurement, documentation, material sampling and testing methods for soils and concrete.

**CONM2210 - Construction Scheduling** ..... ***(3 credits)***
Planning and scheduling are important management tools. In this course students will work with scheduling techniques commonly used in the construction industry to bring projects to timely and economically successful completion.

***Corequisites:***

- CONM2217

**CONM2212 - Site Management** ..... ***(3 credits)***
This course covers construction site management from the standpoint of best utilization of site, facilities and services in a safe and efficient manner to complete construction projects.

**CONM2213 - Safety Management** ..... ***(2 credits)***
This course includes construction management applications in the areas of safety and health. Students will have an opportunity to earn OSHA 30-hour authorization for successful course completion.

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**CONM2217 - Computer Estimating and Bidding** ..... ***(3 credits)***
This course is designed to utilize computer estimating software such as spreadsheets, databases and industry-leading software to produce competitive, timely and complete construction bids.

***Prerequisites:***

- CONM1108
- CONM1124

***Corequisites:***

- CONM2210

**CONM2222 - Construction Management Internship** ..... ***(2 credits)***
This course will provide construction management students with an opportunity to apply and extend their knowledge, practice their skills, integrate behaviors and explore areas of employment within the construction industry. Students will perform activities consistent with program outcomes in an industry setting with the supervision of the site employer.

**ENGL1101 - College Writing** ..... ***(3 credits)***
Meets MnTC Goal Area 1. This is an introductory course designed to prepare students for later college and career writing through a process approach with particular emphasis on revision. Students consider purpose and audience as they read, discuss and refine their work to develop confidence in their writing and communication skills.

***Prerequisites:***

- ELL1085
- ENGL0097
- or placement in College Level English.

**ENGL1215 - Writing for the Workplace** ..... ***(3 credits)***
Meets MnTC Goal Area 1. This composition course focuses on writing and designing professional and technical documents, including print and non-print correspondence, descriptions, instructions, reports and proposals, along with promotional material. Analysis, critical thinking and synthesis of sources will be covered, along with the development of presentation skills. Coursework also includes a formally documented, multi-source professional project. This course builds on the foundations of College Writing and provides students with additional opportunities to develop and refine their writing through a process approach.

***Prerequisites:***

- ENGL1101

**ENGT1118 - Construction and Manufacturing Math** ..... ***(3 credits)***
This course covers the application of common geometric and trigonometric calculations related to the construction and manufacturing industries.

***Prerequisites:***

- MATH0055

**ENGT1126 - Engineering Graphics** ..... ***(3 credits)***
This course introduces and develops basic skills in drawing, lettering, orthographic projection, sections and dimensioning. Students in this course will apply the basic fundamentals of pictorial drawing, including isometric, oblique, perspective, shade and shadow, and freehand sketching.

**BUS1100 - Business Computers** ..... ***(3 credits)***
Students will utilize business computer software applications including word processing, spreadsheets, databases and presentation software to solve business problems, emphasizing professional design and organization. Additional topics include basic computer hardware, computer security and ethics, privacy concerns and professional communication standards.

**ENGT1100 - Introduction to Building Information Modeling** ..... ***(3 credits)***
Building Information Modeling (BIM) is increasingly recognized as a best practice in construction, building design and related disciplines. BIM provides processes and technologies to improve productivity and efficiency in these industries. This course will provide the student an introduction to BIM concepts, terminology and application of best practices.

**ECON2210 - Macroeconomics** ..... ***(3 credits)***
This course provides the student with a means to study economic principles as they relate to determinants of national income, national income accounting, business cycles, unemployment, inflation and aggregate expenditures. The course also examines macroeconomic policy and provides information to gain further understanding in the areas of fiscal policy, financial markets, money and banking, monetary policy, international policy and the varying viewpoints that have evolved throughout history, including the Keynesian and Monetarist schools of thought.

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**ECON2222 - Microeconomics** ..... ***(3 credits)***
Microeconomics stresses the concepts of scarcity, production possibilities, supply and demand curves, elastic and inelastic goods and services, competition, monopolies, oligopolies, poverty and income distribution in the United States. In general, microeconomics examines the functioning of individual industries and the behavior of the individual.

**COMM1120 - Introduction to Public Speaking** ..... ***(3 credits)***
Meets MnTC Goal Area 1. This course clarifies the process of oral communication, clarifies the basic principles of public speaking and allows the student to increase the application of these principles while both speaking and listening.

**COMM1130 - Small Group Communication** ..... ***(3 credits)***
Meets MnTC Goal Areas 1 and 2. This course focuses on communication issues in small groups and the importance of small group work in business today. An emphasis will be placed on improving communication skills for successful teamwork, group cohesiveness and the responsibility to group goals and tasks. Students will be provided with opportunities to build their group communication skills through practice.

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# CONSTRUCTION MANAGEMENT

## ASSOCIATE OF APPLIED SCIENCE (AAS) – 60 CREDITS

Program Plan — "Primary"

Locations: Moorhead

### 1st Fall Term (16 credits)

**Courses**

| Course | Crds |
|---|---|
| CONM1101 - Construction Documents and Codes | 3 |
| CONM1102 - Site/Building Layout | 2 |
| CONM1104 - Construction Management Principles | 2 |
| CONM1124 - Building Systems | 3 |
| ENGL1101 - College Writing | 3 |

**3 credits in one or more of the following:**

General Education w/MnTC Goals

### 1st Spring Term (15 credits)

**Courses**

| Course | Crds |
|---|---|
| CADD1000 - AutoCAD Basics | 3 |
| CONM1108 - Principles of Estimating | 4 |
| CONM2213 - Safety Management | 2 |
| ENGT1118 - Construction and Manufacturing Math | 3 |
| ENGT1126 - Engineering Graphics | 3 |

### 2nd Fall Term (15 credits)

**Courses**

| Course | Crds |
|---|---|
| BUS2204 - Principles of Management | 3 |
| CONM2204 - Materials Testing | 3 |
| CONM2212 - Site Management | 3 |
| ENGL1215 - Writing for the Workplace | 3 |

**3 credits in one or more of the following:**

BUS1100 - Business Computers 3
ENGT1100 - Introduction to Building Information Modeling 3

### 2nd Spring Term (14 credits)

**Courses**

| Course | Crds |
|---|---|
| CONM2210 - Construction Scheduling | 3 |
| CONM2217 - Computer Estimating and Bidding | 3 |
| CONM2222 - Construction Management Internship | 2 |

**3 credits in one or more of the following:**

ECON2210 - Macroeconomics 3
ECON2222 - Microeconomics 3

**3 credits in one or more of the following:**

COMM1120 - Introduction to Public Speaking 3
COMM1130 - Small Group Communication 3

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