Assessment Plan
Bachelor of Science in Construction Management Program
Department of Construction Management and Engineering
North Dakota State University

Mission Statement

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 industry.

Educational Program Objectives

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

The Educational Program Objectives are further connected to the Department’s Learning Outcomes.

Learning Outcomes

Learning Outcomes are statements that describe the skills and knowledge that students are expected to know by the time of graduation and that support the educational (degree) program objectives.

1. An ability to apply knowledge of mathematics, science, and management.
2. An ability to analyze and interpret data.
3. An ability to design a system or process (including bids, estimates, schedules, etc.) to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health, safety, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve management problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of management solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in, life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern management tools necessary for construction industry practice.

Learning Outcomes 1, 2, and 11 are used to measure Educational Program Objective 1. Learning Outcomes 5, 8, and 11 are used to measure Educational Program Objective 2. Learning Outcomes 1, 2, and 3 are used to measure Educational Program Objective 3. Learning Outcomes 4, 7, and 8 are
used to measure Educational Program Objective 4. Learning Outcomes 6, 9, and 10 are used to measure Educational Program Objective 5. This correlation is represented in the table below.

<table>
<thead>
<tr>
<th>Educational Program Objectives</th>
<th>Learning Outcomes</th>
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**Assessment Tools**

The Department of Construction Management and Engineering uses a variety of tools and methods to assess program objectives and outcomes on a continual basis. Assessments are given in a variety of different formats, such as an online survey or a hard copy survey. They are also given in different contexts, such as with the Department Chair or with IAC members. This accommodates the different needs of different students. The assessments are given on two different levels: Outcome Level and Course Level. Outcome Level evaluations measure how the 11 learning objectives are met, and Course Level evaluations measure how each Construction and Construction Science course meets the department’s goals. More information about the two course levels can be found in their respective sections below.

The results of the assessment tools show areas where the Department excels as well as where there is room for improvement. The results are then used for continuous improvement and updating of the Department’s benchmarks. Blank copies of the following eight assessment tools are also located in Appendix G.

**Assessment Tools and Performance Criteria for Outcomes/Objectives**

The following six assessment tools are categorized as Outcome Level assessments. These evaluations are taken by the students and measure how well the students have met the Educational Program Objectives and Learning Outcomes throughout their study period in the CM&E program.

Below is a table of each assessment tool and how it measures each Learning Outcome. Some assessment tools do not meet a specific Learning Outcome, but still provide important department feedback, such as specific strengths and weaknesses identified in the responses from write-in questions.
<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Graduation Survey</th>
<th>Alumni Survey</th>
<th>Employer Survey</th>
<th>Exit Interviews by Chair</th>
<th>Exit Interviews by IAC Member</th>
<th>Capstone SROI</th>
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Graduation Survey
The Graduation Survey is a survey given every semester to graduating Construction Management seniors about their experience as a student in the program. This survey is a broad survey that assesses wider Department goals but also directly assesses the Department Learning Objectives. Some examples are:

- “The required math courses were sufficient for my construction course needs” (Learning Outcome 1)
- “My estimating courses will enable me to develop appropriate levels of cost estimates and budgets for project planning and control” (Learning Outcome 3)
- “My professional and ethical responsibilities were included in my instruction” (Learning Outcome 6)

The responses of the Graduation Survey are both “yes” or “no” replies, and responses to rating questions which range from 1 to 5, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The Department aims for an average value of 4, and if the average value is below 4, corrective action will need to be taken. Write-in sections are included to provide a space for specific additional comments. At the end, the student is able to share if, after graduation, they are seeking a job, have already been offered a job, or plan to attend graduate school.

Alumni Survey
The Alumni Survey is a 14 question survey given to former Construction Management graduates in order to assess how well they felt that the Program prepared them for their later careers. The
survey is given every three years, and the last one was conducted in fall 2013. The questions ask the participant to directly rate how they felt each of the 11 Learning Objectives were met.

The responses of the Alumni Survey range from 1 to 10, with 1 being the lowest possible score, and 10 being the highest possible score. The Department aims for a mean value of 8, and if the mean is below this, corrective action will need to be taken. Write-in sections are included to provide a space for specific additional comments.

**Employer Survey**
The Employer Survey is a 14 question survey given to the employers of former Construction Management graduates in order to measure how well they felt that the Program prepared their Construction Management program employees for their later careers. The survey is given three years after the student graduates, and the last one was conducted in spring 2014. The questions ask the participant to directly rate how they felt each of the 11 Learning Objectives were met.

The responses of the Employer Survey range from 1 to 10, with 1 being the lowest possible score and 10 being the highest possible score. The Department aims for a mean value of 8, and if the mean is below this, corrective action will need to be taken. Write-in sections are included to provide a space for specific additional comments.

**Exit Interviews by Chair**
The Exit Interview by Chair is an 18 question survey given by the Department Chair to Construction Management seniors who are about to graduate. This survey is a broad survey that assesses wider Department goals but also directly assesses some of the Department Learning Objectives. Some examples are:

- “Do you feel that the topic of ethics has been discussed sufficiently in the courses?”
  (Learning Outcome 6)
- “Do you feel confident on technical writing and oral presentation?”
  (Learning Outcome 7)
- “Do you feel that you have sufficient knowledge on computer programs used in the construction industry?”
  (Learning Outcome 11)

All but one of the responses of the Exit Interviews by the Chair are replies to open-ended questions. These responses are important in showing specifically where strengths in the Department are as well as specific ways that the Department can improve. The participant is also asked to rate their experience in the Department from 1 to 10, with one being the lowest possible score and 10 being the highest possible score. The Department aims for a mean value of 8, and if the mean is below this, corrective action will need to be taken. In addition, the Department measures how well the three learning objectives above are measured. The Department aims for 80% of responses to these questions to be “yes”, and if the average value is less than 80% “yes”, corrective action will need to be taken.

**Exit Interviews by IAC Members**
The Exit Interview by IAC Members is an 11 question survey given by IAC members to Construction Management seniors who are about to graduate. This survey is a broad survey that assesses wider Department goals but also directly assesses some of the Department Learning Objectives. Some examples are:
• “Do you feel confident on technical writing and oral presentation?”
  (Learning Outcome 7)
• “Do you feel that you have sufficient knowledge on computer programs used in the construction industry?”
  (Learning Outcome 11)

All but one of the responses of the Exit Interviews by IAC Members are replies to open-ended questions. These responses are important in showing specifically where strengths in the Department are as well as specific ways that the Department can improve. The participant is also asked to rate their experience in the Department from 1 to 10, with one being the lowest possible score and 10 being the highest possible score. The Department aims for a mean value of 8, and if the mean is below this, corrective action will need to be taken. In addition, the Department measures how well the two learning objectives above are measured. The Department aims for 80% of responses to these questions to be “yes”, and if the average value is less than 80% “yes”, corrective action will need to be taken.

Capstone Student Rating of Instruction (SROI)
The Capstone SROI is a survey taken by the Construction Management students after completing CM&E 412 – Construction Management Capstone. Questions 1-7 are general questions about the course that are used for all classes throughout the University. The next 11 optional questions ask the participant to directly rate how they felt each of the Department Learning Objectives were met. Finally, the last four questions are write-in questions about likes, dislikes, and overall opinions of the program. This information can be found in the course binder.

The responses of the Capstone SROI are both replies to open-ended questions and responses to rating questions which range from 1 to 5, where 1 = Very Poor, 2 = Poor, 3 = In Between, 4 = Good, and 5 = Very Good. The Department aims for a mean value of 4, and if the mean value is below 4, corrective action will need to be taken. Write-in sections are included to provide a space for specific additional comments.

Assessment Tools and Performance Criteria for Courses

The following two assessments are categorized as Course Level assessments. These evaluations are taken by instructors and Industry Advisory Council members and measure how each individual Construction and Construction Science course meets department goals.

Faculty Course Assessment Report (FCAR)
At the end of every semester, faculty members are asked to complete an FCAR on their performance during the course. The assessment covers the following areas:

• Catalog Description
• Grade Distribution
• Modifications made to course
• Course outcomes assessment ACCE (matrix content)
• Course outcomes assessment (ABET)
• Communications component
• Ethics component
• Contemporary issues component
• Student feedback
• Reflection
• Proposed actions for course improvement
This assessment is an important tool to reflect on how the professor changed the course from past semesters, the current semester, and how they will conduct the course for future semesters. It is also a record of how well the course met industry needs as well as student expectations. If faculty goals are not met in this evaluation, then they must provide a plan of action to improve next time the course is offered. An FCAR for each course is included in each of the course binders and will be available during the ACCE visit.

The responses of the FCAR are replies to open-ended questions. The faculty member is also required to provide feedback about the written comments regarding the quality of the course as well as a rating of the course quality by students. The Department aims for a mean value of 4, and if the mean value is below 4, corrective action will need to be taken.

**Industry Advisory Council (IAC) Course Evaluations**

In contrast to the internal Faculty Assessment, the Industry Advisory Council course evaluations are an external review of the Construction instructors by Industry Advisory Council members. All Construction and Construction Science courses receive this evaluation once every three years. The first page of the evaluation poses three questions related to general comments about the course presentation and course material. The second part of the evaluation is a review which asks specific questions about the course, such as:

- Are they teaching any information that is outdated?
- What kind of tools does the course use to measure knowledge week to week?
- Was the professor able to communicate effectively with students?

This assessment tool is unique in that it gives an industry perspective as to whether or not the course may be representative of the knowledge construction managers need while working in the construction industry. The instructor can then modify their course contents in response to the IAC member’s comments. A binder of recent IAC Course Evaluations will be available during the ACCE visit.

The responses of the IAC Course Evaluations are replies to open-ended questions. Two areas that are of special importance are how current the course material is and if the professor was able to communicate effectively with students. IAC members are experts about current needs in the construction industry, and if it is determined that the course material is outdated, corrective action will need to be taken. Also, if an IAC member feels that the professor is unable to communicate effectively with students, corrective action will need to be taken. Some IAC members also provide an overall rating of the course, although it is not mandatory. The goal for this rating is 80%, and if the rating is below 80%, corrective action will need to be taken.