



Program Quality Improvement Plan (QIP) Construction Management Program University of Wyoming

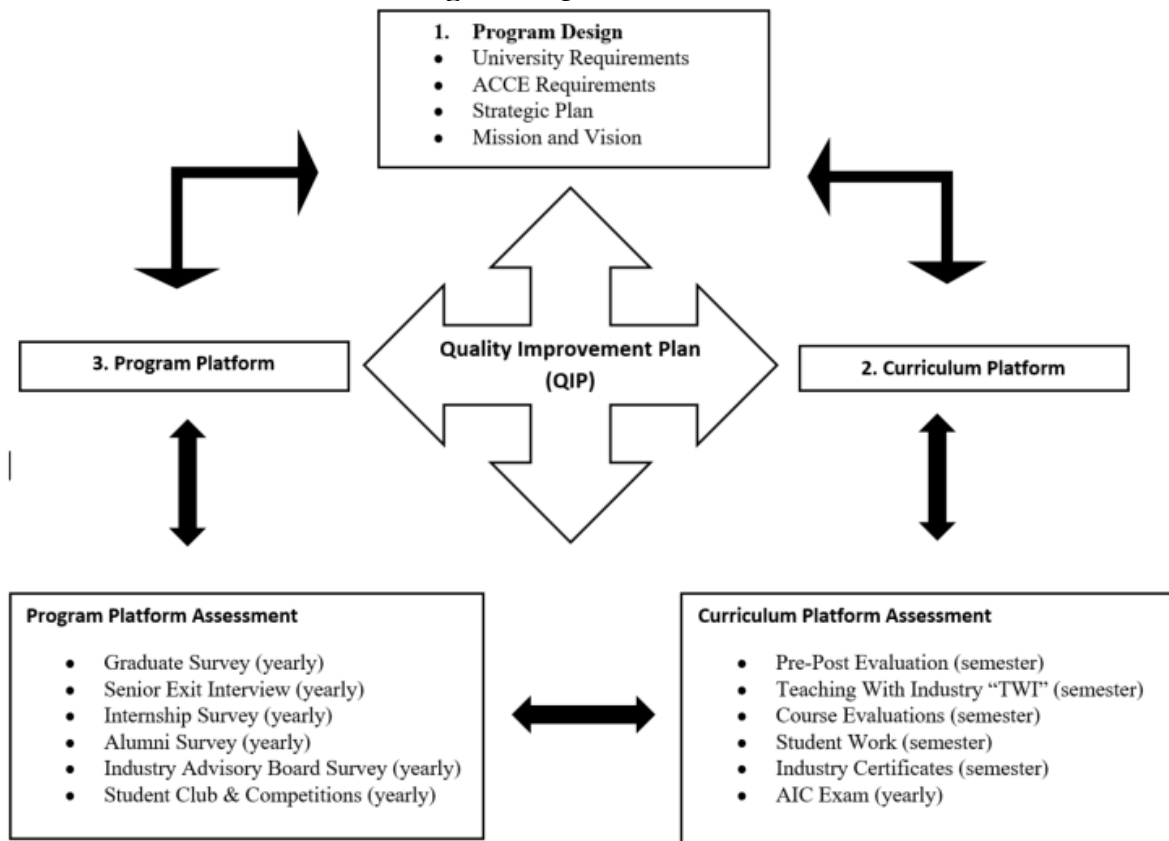
Purpose

The QIP (Figure 1) supports the foundation for continuous improvement of the undergraduate Construction Management (CM) four-year Bachelor of Science degree program in the Civil, Architectural Engineering and Construction Management (CAECM) department. The QIP is comprised of the following three major quality improvement categories:

1. Program Design
2. Curriculum Platform
3. Program Platform

Each one of the three (1, 2 & 3) quality improvement categories are evaluated in support of a continuous improvement cycle in the program.

Figure 1: QIP Framework





Definitions associated with each quality improvement category are:

1. Program Design
Program design supports the core underpinning of the CM program with direct alignment to university program requirements, ACCE Construction Management program requirements, and a Strategic Plan for the program that is guided by the programs mission and vision.
2. Curriculum Platform
The curriculum platform supports the education arm of the program that includes but is not limited to course instruction and the evaluation of the learning experience.
3. Program Platform
The program platform supports external classroom activities that includes but are not limited to student and industry feedback.

1. PROGRAM MISSION and EDUCATIONAL OBJECTIVES

Program Mission:

The mission of the Department of Civil and Architectural Engineering and Construction Management at the University of Wyoming is:

- To educate and prepare Civil and Architectural Engineering and Construction Management students to lead as designers, builders, project managers and entrepreneurs as it relates to the sustainable built and natural environments.
- To develop technical solutions through research, innovation, and improved infrastructure to diversify and grow the economies that serve Wyoming and the world.

Program Educational Objectives

- Enhance the Civil and Architectural Engineering ABET-accredited undergraduate programs and develop an ACCE- Accredited Construction Management program.
- Promote innovative teaching and learning methods.



- Recruit and retain outstanding faculty and staff.
- Increase the number of highly productive MS and PhD graduates in the Civil and Architectural Engineering programs. In the future, pursue a graduate program in Construction Management.
- Sustain and enhance extension and outreach activities.
- Involve professionals in our hands-on teaching, research, and workforce development activities.
- Increase capacity to develop technical solutions to support infrastructure, industry, and individuals
- Foster diversity within all our programs

2. PROGRAM OUTCOMES:

The Program Outcomes describe the expected accomplishments of graduates during the first several years following their graduation from the CM Program at the University of Wyoming. The three core CM program outcomes are:

1. Content/Discipline Knowledge and Skills, where students must be able to:
 - Apply construction management skills as a member of a multidisciplinary team.
 - Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
 - Develop a construction safety plan.

The development of these skill sets is assessed during a student's academic career through exams, laboratory assessment, design projects, teamwork assessment, and assignments.

2. Communication Skills, where students must be able to:
 - Create written communications appropriate to the construction discipline.
 - Create oral presentations appropriate to the construction discipline.

The development of these skill sets is assessed during a student's academic career through oral and written presentations, exams, projects, laboratory assessment, and



other assignments throughout the curriculum.

3. Critical Thinking Skills, where students must be able to:

- Analyze professional decisions based on ethical principles.
- Analyze construction documents for planning and management of construction processes.
- Analyze methods, materials, and equipment used to construct projects.

The development of these skill sets is assessed during a student's academic career through exams, projects, laboratory assessment, and other assignments throughout the curriculum.

3. PROGRAM LEARNING OUTCOMES (Adopted from ACCE SLOs):

Program learning outcomes will be used to assess success of the Construction Management program in meeting the program's mission and education objectives. The CM program has adopted the ACCE Student Learning Outcomes (SLOs) for a Bachelor of Science in Construction Management program. These learning outcomes are:

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 multidisciplinary 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.

4. ASSESSMENT TOOLS AND FREQUENCY

The CM program will use several assessment tools to measure and evaluate the degree program objectives and learning outcomes as stipulated following:

Direct Assessments of Learning

- Curriculum Platform Assessment

At a minimum, one direct coursework assessment will be established to evaluate student achievement for each of the ACCE Student Learning Outcomes. These assessments will be delivered at the course level in which the learning outcome is identified to be addressed. Data will be collected each time the course is taught and analysis of the data for assessment purposes will be on a yearly cycle.

Indirect Assessment of Learning

- Institutional Course Evaluations

Students take course evaluation surveys online, anonymously, for each course in the curriculum. Results are made available to the respective faculty shortly after the end of the semester. Depending upon the outcome, modifications may be warranted. Proposals for major changes, particularly those that may have an impact on other areas of the curriculum, are discussed at a meeting of the full CM faculty and CM Chair.

5. PERFORMANCE CRITERIA

The CM QIP utilizes data from numerous assessment sources including but not limited to:

Assessment Tool	Assessment Description	Frequency
1 Graduates Survey		
Focuses on program strengths, weaknesses, additional suggestions, and program objectives.	Assessment findings are based on a Likert Scale in support of ACCE SLO mastering.	Yearly
2 Senior Exit Interview		
Focuses on individual and group feedback in support of student suggestions for improving the program.	Assessment findings are drawn from a group interview based on open ended questions for suggestions.	Yearly
3. Employer Survey (Internships)		



Focuses on Program Objectives as viewed from an employer's platform.	Assessment findings are based on a Likert Scale in support of program objectives.	Yearly
4. Alumni Survey		
Survey will be administered to graduates two years after graduation. Will focus on how well they can apply what they learned in their profession.	Assessment survey will focus on the program objectives and how well students feel they were prepared for success in the field.	Yearly
5 Pre/Post Course Evaluation		
Administered to students at the beginning of each course to determine their level of understanding before and after a course has been taught.	Assessment findings are based on the student learning outcomes for each class	Semester
6 Student Work		
Administered during every semester in the form of Assignments, Tests, Quizzes, Lab Reports, and Projects. Focuses on how well students comprehend course material.	Assessment findings are based on student work in all CM related courses	Semester
7 National AIC Exam		
The National AIC exam is a requirement for all senior students to take that focuses on ACCE SLO competencies.	Assessment findings are based on the AIC exam, required for all senior students.	Yearly
8 Professional Certificates		
Multiple integrated industry certificates are required by all CM students.	Assessment is based on the acquiring of these certificates.	Yearly
9 Teaching with Industry (TWI)		
Industry Practitioners are part of every CM course offered in the program.	Course input from practitioners is integrated by instructors of record every time a course is taught.	Semester
10 Industry Advisory Board		
IAB Board members engage in the strategic mission and vision of the program.	The IAB meets twice a year with direct feedback on trends in the industry as it relates to student learning outcomes.	

6. EVALUATION METHODOLOGY

For each direct measure of an ACCE SLO, 75 % of students will achieve a 70 % (C grade) or better on the SLO assessment to demonstrate attainment of each particular SLO. Direct assessments will be administered and evaluated by the faculty of record for the course in which the assessment is administered.



Measurement	Student Benchmark	Grade Benchmark
Identified ACCE SLO	75% of students in class	will achieve 70% or better on identified SLO

For each indirect measure of a specific ACCE SLO, a 20 to 30 % increase from pre-course to post-course online surveys has been identified to demonstrate achievement of the particular SLO results which will be correlated and analyzed.

Measurement	Pre-Course Evaluation	Post Course Evaluation
Identified ACCE SLO	Students identify their pre-course knowledge level on a specific SLO on a Likert scale from 1-100%	Students identify their post course knowledge level on specific SLO on a Likert scale from 1- 100% with an anticipated knowledge gain of 20 - 30 % between the beginning and end of semester.

Direct as well as indirect assessment results will be evaluated in support of the program mission, learning objectives and program outcomes, to implement change where needed.