Minnesota State University-Mankato

College of Science, Engineering & Technology

Construction Management Department

QUALITY IMPROVEMENT PLAN (QIP)

FOR THE CONSTRUCTION MANAGEMENT DEGREE PROGRAM

Organization

The Quality Improvement Plan (QIP) consists of Strategic Plan for the educational unit, the degree program assessment plan, and the assessment implementation plan for the degree program.

The educational unit is the Department of Construction Management. The degree program is Construction Management. Construction Management is the only degree program in the department.

ASSESSMENT PLAN

FOR THE CONSTRUCTION MANAGEMENT DEGREE PROGRAM

Scope

The program assessment plan is the degree program comprehensive assessment of effective procedures to determine if the program's goals and learning outcomes are being met. It explains the required assessment data to be collected, the frequency and evaluation methods to be used to examine the performance criteria are met.

Program Mission Statement

The mission of the Construction Management program is to advance world-class project management for the built environment through effective teaching, research, and service.

Program Goals

The Construction Management program will provide quality undergraduate and graduate programs that foster student learning through a wide variety of instructional applications. This will be accomplished by the following goals:

1. **Curriculum:** Offer globally competitive, technologically current programs that are recognized and respected for preparing students to enter the workforce.

    A. Execution;
        - Providing a blend of management and technical classes in the program of study which align with the industry needs
        - Offering the classes in different instructional delivery methods which include face to face, hybrid, and online format
        - Utilizing opportunities to learn and use the current advanced technology in the construction industry
        - Providing international opportunities to explore the required knowledge and skills in the global construction industry
        - Partnering with other educational and professional entities to offer competitive learning opportunities

    B. Resources Needed;
        - Availability of faculty positions to hire qualified knowledgeable full and part time faculty members
        - Availability of funding and capacity to support the required level of technology
        - Availability of study abroad and/or exchanged students program opportunities

    C. Performance Criteria;
        - The ability to offer the expected number and types of required classes will be assessed; the program will follow recommendations from the Advisory Committee as to which new courses to implement. The program will follow the guidelines provided by MnSCU as to the type of courses provided.

- The number and the quality of software packages including the hardware units available to students will be assessed; at least a computer lab with 24 seats should be maintained for the different construction classes with the appropriate software packages that serve students in construction drawings, cost estimating, scheduling, and project management
- Number of students who would benefit from the international opportunities will be assessed; at least one study abroad program will be available to students in the CM program
- The ability to have different partnership agreements with educational and professional entities will be assessed; at least one partnership agreement shall be maintained to offer competitive learning opportunities

D. Assessment Method;
- Students, alumni, employers and/or IAB surveys, and the assessment of the reported qualitative and quantitative data will be collected and analyzed

E. Assessment Period; **Fall 2016**

2. **Advising:** Provide effective academic and career advising to foster a commitment to life-long learning.

A. Execution;
- Collaborating with the college advising center to support student needs
- Assigning the appropriate number of advisees to the different full time faculty in the program
- Creating the effective and efficient tools to facilitate the advising effort at the program level

B. Resources Needed;
- The college advising center support
- Faculty time commitment to students advising effort in the program

C. Performance Criteria;
- The ability to have the appropriate faculty advising load to achieve a successful learning experience for students will be assessed; the advising load will be equally assigned among all full time tenured and tenure-track faculty.
- The students' satisfaction rate of their advising experience will be assessed; satisfaction rate will be maintained at 80% and above from survey feedback.

F. Assessment Method;
- Students survey, and the assessment of the reported qualitative and quantitative data will be collected and analyzed

D. Assessment Period; **Fall 2017**

3. **Student Activity:** Involve students in industry-sponsored events to facilitate students' professional development prior to graduation.

A. Execution;
- Enhancing the student chapter Construction Management Student Association (CMSA) activities that would create networking opportunities and develop the professional and managerial soft skills in the construction industry

- Participating in construction related student competitions
- Enhancing the extra-curricular activities

B. Resources Needed;
- A faculty advisor to support the students chapter
- The industry professional and financial support to provide these opportunities
- An active student chapter organization

C. Performance Criteria;
- The ability to have at least one event each semester for students to support their professional development will be assessed; two events will be maintained annually
- The appropriate number of students in teams to participate in competitions will be assessed; the CMSA officers with the program faculty agreed that at least one student competition and one team to participate should be maintained every year.
- The availability of the appropriate funding capacity will be assessed; the CMSA officers with the program faculty agreed that at least ten thousand dollars should be raised every year to maintain students activities and networking opportunities

D. Assessment Method;
- Assessment report of at least two event every year, which includes the number of participated students with the available financial data

E. Assessment Period; **Fall 2015**

4. **Faculty Development:** Provide opportunities that enhance professional growth, provide expertise to industry and government partners and promote active learning for faculty and students.

A. Execution;
- Encouraging and providing opportunities to faculty to acquire the appropriate continuing & professional training and certification
- Providing continuing & professional education opportunities to professionals in the industry to improve their skills.

B. Resources Needed;
- Allocating time and grants to faculty

C. Performance Criteria;
- Number of professional training events will be assessed; at least one professional/ training event each full time faculty shall participate in.
- Total amount of funding allocated to these training events will be assessed; at least $1,300 will be assigned by the university for each full time faculty to be used for professional development activities and any extra required funding will be evaluated annually by the program

D. Assessment Method;
- The number and the description of the training events, total expenditure amount on training and professional development activities will be assessed and analyzed

E. Assessment Period; **Fall 2017**

5. **External Support:** Maintain a stable and effective Advisory Board to provide industry perspective and financial support to faculty and to grant students scholarships and job opportunities.

   A. Execution;
      - Hosting and promoting industry advisory board (IAB) meetings
      - Collaborating with the IAB members in the different committees to provide the appropriate curriculum, program development, sponsorship, and financial support opportunities

   B. Resources Needed;
      - An adequate number of advisory board members
      - Professional and Funding capacity by the IAB members

   C. Performance Criteria;
      - The ability to have more than one collaboration event with IAB members each academic year will be assessed; two IAB meetings with faculty will be maintained annually
      - Total amount of financial support to faculty development activities will be assessed; one thousand dollars will be maintained to fund each full time faculty development activities
      - Total number of awarded scholarships and the dollar amount of funding awarded will be assessed; at least $10,000 dollars will be maintained for scholarships for at least 10 awarded scholarships

   D. Assessment Method;
      - Assessment report of at least two meetings every year including the reported financial data

   E. Assessment Period; **Fall 2015**

6. **Assessment & Planning:** Implement planning and assessment methods that anticipate program needs to maximize available resources in support of our mission and goals.

   A. Execution;
      - Developing a Program Quality Strategic Plan
      - Developing Program Assessment Plan
      - Developing Quality Assessment Implementation Plan

   B. Resources Needed;
      - Program and faculty commitment to the continues improvement efforts and reports
      - Availability of the tools and mechanism to collect the supporting data from the different stakeholders

   C. Performance Criteria;

- Developing performance assessment implementation report that align with the program strategic plan, university policies and the accreditation requirements; the report will be analyzed

D. Assessment Method;
   - The renewal of ACCE accreditation and assess the final report as needed with the follow up action items

E. Assessment Period; **Fall 2016**

Program Learning Outcomes:

The ACCE SLO's have been adopted as the program learning outcomes which are included in the following table;

Mapping the Construction Management Program Learning Outcomes with the Institutional Undergraduate Students Learning Outcomes

Program LO's	Institution LO's
1. Create written communications appropriate to the construction discipline	**Academic Achievement** - Students will demonstrate competence in specific areas of academic disciplines that will directly impact their career endeavors. **Communication** - Students will demonstrate the ability to effectively communicate verbally, in writing, and through digital and/or visual media.
2. Create oral presentations appropriate to the construction discipline	**Academic Achievement** - Students will demonstrate competence in specific areas of academic disciplines that will directly impact their career endeavors. **Communication** - Students will demonstrate the ability to effectively communicate verbally, in writing, and through digital and/or visual media.
3. Create a construction project safety plan	**Academic Achievement** - Students will demonstrate competence in specific areas of academic disciplines that will directly impact their career endeavors. **Critical Thinking** - Students will demonstrate the ability to analyze situations and problems in order to identify and test solutions.
4. Create construction project cost estimates	**Academic Achievement** - Students will demonstrate competence in specific areas of academic disciplines that will directly impact their career endeavors.

	Critical Thinking - Students will demonstrate the ability to analyze situations and problems in order to identify and test solutions.
5. Create construction project schedules	**Academic Achievement** - Students will demonstrate competence in specific areas of academic disciplines that will directly impact their career endeavors. **Critical Thinking** - Students will demonstrate the ability to analyze situations and problems in order to identify and test solutions.
6. Analyze professional decisions based on ethical principles	**Civic Engagement** - Students will demonstrate the awareness, knowledge, and skills to actively participate individually or collectively on issues of societal concern.
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	

Assessment Tools for Program Goals

The main assessment tools for program goals are:

1. Students, alumni and employer surveys. Surveys are conducted manually and/or electronically for indirect assessment (IA) of progress on program goals. The new developed survey is based on the new ACCE outcomes which measure each group of stockholder perceptions regarding the achievement of program goals.
2. Some program objectives can be assessed based on specific achievements whether qualitative or quantitative targets. These are described in the program strategic plan.

Performance Criteria for Program Goals

The performance criteria for each program goal is found under item “C” for each measurable item under the degree program goals

Evaluation Methodology for Program Goals

Using the specified tools to assure that assessments will be performed and analyzed according to the defined cycle. The assessment procedure is the responsibility of the department chair. The results and the any actions taken will be shared with the different stockholders and published on the department website. Suggestions from improvement will be solicited from the IAB members and faculty.

Frequency of Assessment for Program Goals

The program goals will be assessed, analyzed and reported over three year cycle as identified in the first part of this assessment plan.

Mapping the ACCE Students Learning Outcomes with Program Goals including the assessment cycle year

ACCE LO's	Year of Assessment	Program Goals	Year of Assessment
1. Create written communications appropriate to the construction discipline.	**2015**	**Curriculum:** Offer globally competitive, technologically current programs that are recognized and respected for preparing students to enter the workforce. This program goal is the only goal that mapped against ACCE LO's	Fall 2016
2. Create oral presentations appropriate to the construction discipline.	2016		
3. Create a construction project safety plan.	2016		
4. Create construction project cost estimates.	2016		
5. Create construction project schedules.	**2015**		
6. Analyze professional decisions based on ethical principles.	2017		
7. Analyze construction documents for planning and management of construction processes.	2017		
8. Analyze methods, materials, and equipment used to construct projects.	2018		
9. Apply construction management skills as a member of a multi-disciplinary team.	2017		
10. Apply electronic-based technology to manage the construction process.	**2015**		
11. Apply basic surveying techniques for construction layout and control.	2016		
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	**2015**		
13. Understand construction risk management.	2018		
14. Understand construction accounting and cost control.	2019		
15. Understand construction quality assurance and control.	2018		
16. Understand construction project control processes.	2019		
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.	2017		
18. Understand the basic principles of sustainable construction.	2019		
19. Understand the basic principles of structural behavior.	2018		
20. Understand the basic principles of mechanical, electrical and piping systems.	2019		

Assessment Tools for Program Learning Outcomes (PLO's)

The main assessment tools for PLO's are:

1. Students, alumni and employer surveys will be utilized. Surveys are indirect assessment (IA) and conducted manually and/or electronically of progress on PLO's. The new developed surveys is based on the new ACCE outcomes which measure each group of stockholder perceptions regarding the achievement of PLO's.
2. Embedded course assessments will be utilized. Course assessments are direct assessments (DA), they include but not limited to; exams, assignments, quizzes, and projects. They are performed by the instructor of the course to support the PLO.

Performance Criteria for Program Learning Outcomes (PLO's)

Direct assessment (DA): the performance criteria of DA is that if 70% of the students score at least 70% on the assessment, the PLO is met. A score below 70% calls for explanation and may require corrective action.

Indirect assessment (IA): the performance criteria of IA is 70%. If the average rank on a Likert scale is 70% or above, the PLO is met. A score below 70% calls for explanation and may require corrective action. However, the subjective nature of surveys will be recognized. Responses of "Not Applicable" will be discounted.

Evaluation Methodology for Program Learning Outcomes (PLO's)

Using the specified tools to assure that assessments will be performed and analyzed according to the defined cycle. The assessment procedure is the responsibility of the department chair. The results and the actions taken will be shared with the different stockholders and published on the department website. Suggestions from improvement will be solicited from the IAB members and faculty.

An assessment table that shows the program major courses and assessment methods is included below. At least two assessments will be used for each PLO, which include at least one DA and another that can be DA or IA. Each PLO will be assessed in at least one construction management course.

Frequency of Assessment for Program Learning Outcomes (PLO's)

The program learning outcomes will be assessed and analyzed over five year cycle. The year of assessment is identified previously.

MSU-Mankato Construction Management Degree PLOs/ SLOs Assessment Map

	Legend Direct Assessment (**DA**) -evidence of student learning is in the form of a student product or performance that can be evaluated Indirect Assessment (**IA**)- evidence is the perception, opinion, or attitude of students (or others). ******Two direct assessment will be used	Construction Work Exp.	Intro to Construction Management	Construction Graphics	Construction Documents	Construction Materials and Methods I	Construction Materials and Methods II	Introduction to Statics and Mechanics of Materials	Civil Engineering Measurement	Construction Professional Practice	Construction Safety	Estimating I	Planning and Scheduling	Construction Project Management	Mechanical and Electrical Systems for Construction	Construction Equipment Management	Estimating II	Construction Capstone Project	Construction Seminar	Internship	Construction and Design Law	Graduating Senior Survey	Cycle Year
		CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	CM	BL		
		108	111	120	130	210	220	222	271	297	300	310	330	340	350	380	410	450	492	497	476			
	Program/ Student Learning Outcomes PLOs/SLOs																							
1	Create written communications appropriate to the constuction discipline			DA		DA																IA	1
2	Create oral presentations appropriate to the construction discipline									DA							DA	IA				IA	2
3	Create a construction project safety plan										DA							IA				IA	2
4	Create construction project cost estimates											DA					DA	IA				IA	2
5	Create construction project schedules												DA					IA				IA	1
6	Analyze professional decisions based on ethical principles				DA																	IA	3
7	Analyze construction documents for planning and management of construction processes				DA													IA				IA	3
8	Analyze methods, materials, and equipment used to construct projects						DA									DA						IA	4
9	Apply construction management skills as a member of a multidisciplinary team					DA												IA				IA	3
10	Apply electronic-based technology to manage the construction process												DA					IA				IA	1
11	Apply basic survey techniques for construction layout and control								DA**													IA	2
12	Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process					DA								DA								IA	1
13	Understand construction risk management												DA					IA				IA	4
14	Understand construction accounting and cost control																DA					IA	5
15	Understand construction quality assurance and control					DA												IA				IA	4
16	Understand construction project control and processes												DA				DA					IA	5
17	Understand the legal implications of contract, common, and regulatory law to manage a construction project					DA															DA	IA	3
18	Understand the basic principles of sustainable construction						DA								DA							IA	5
19	Understand the basic principles of structual behavior					DA		DA														IA	4
20	Understand the basic principles of mechanical, electrical, and piping systems			DA											DA							IA	5