

Volume II  
Appendix C

Quality Improvement Plan



Construction Management

Central Washington University  
Construction Management Academic Quality Improvement Plan (CMAQIP)  
Bachelor of Science in Construction Management

**Strategic Plan**

**Program Mission:** The primary mission for the Construction Management program is to provide the highest possible quality general construction education to undergraduate students who are preparing for careers in the construction industry.

The secondary mission is to maintain ongoing contact with the construction industry and to provide support for this industry.

**Vision:** The construction management program vision is to be a dynamic, creative, and inclusive environment that promotes engaged learning and scholarship as it relates to supporting the construction management profession. The program is recognized for its efforts to provide high quality general construction education, applied construction research, and service to the construction industry. It has a strong commitment to be innovative, provide hands-on activity-based learning, prepare students for a lifelong career in construction management, and serve the construction industry.

**Program Goals**

The Major Program Goals Are:

- Goal A: Improve the quality of instruction within the program
- Goal B: Improve diversity within the program
- Goal C: Provide support for the construction industry
- Goal D: Measurably improve the overall quality of the construction program
- Goal E: Support professional development for program faculty
- Goal F: Improve the heavy/civil construction option within the program

### **Assessment Plan**

The assessment plan follows the strategic plan to provide the highest quality general construction education to undergraduate students who are preparing for careers in the construction industry and to maintain ongoing contact and support to the construction industry.

### **Degree Program Objectives:**

The performance criteria for the Degree Program Objectives and Program Learning Outcomes (PLO) are as follows:

1. Number of students admitted into the professional CMGT program each year to be between 36 to 42 students per year.
2. Review of student work within each PLO using SLOs for the designated course.
3. Number of recruiting companies at the Engineering Technologies, Safety, and Construction (ETSC) career fair.
4. Placement of graduates above 90%.
5. Results of American Institute of Constructors Exam (AIC) Exam as a Direct Assessment (DA) where all students must pass with 60% to graduate each year for SLOs 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, and 20.
6. Accreditation is maintained by the American Council for Construction Education (ACCE).
7. Review of Senior Exit Survey as an indirect assessment (IA) and qualitative Interview Report by chair or dean.

### **Program Learning Objectives**

The program learning objectives follow the Student Learning Objectives stated as follows:

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.

**Assessment Method Map:** The table below shows the direct (DA) and indirect (IA) assessment methods for each of the individual courses.

CENTRAL WASHINGTON UNIVERSITY CONSTRUCTION MANAGEMENT PROGRAM		STUDENT LEARNING OBJECTIVES (SLOs) ASSESSMENT DATA (AY Rubric)																			
		ASSESSMENT RUBRIC																			
Course #	Title	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7	SLO8	SLO9	SLO10	SLO11	SLO12	SLO13	SLO14	SLO15	SLO16	SLO17	SLO18	SLO19	SLO20
CMGT 101	Introduction to Construction Management		I	I		I														DA	
CMGT 201	Computer Applications in Construction										DA										
CMGT 265	Construction Documents																				
CMGT 267	Plane Surveying											DA									
CMGT 320	Electrical Systems																				DA
CMGT 343	Construction Estimating I				I																
CMGT 344	Construction Estimating II (GC)	DA			DA																
CMGT 345	Construction Estimating II (HC)	DA			DA																
CMGT 346	Construction Methods and Materials (GC)	I	DA						DA												
CMGT 347	Heavy Civil Methods and Materials (HC)	I	DA						DA												
CMGT 440	Temporary Structures																				
CMGT 441	Wood and Steel Construction																				
CMGT 442	Building Mechanical Systems																				DA
CMGT 443	Heavy Civil Utilities																				DA
CMGT 444	Codes, Contracts, and Specifications							DA					DA	DA					DA		
CMGT 445	Heavy Civil Contract Law							DA					DA	DA					DA		
CMGT 447	Construction Planning, Scheduling, and Control					DA					DA										
CMGT 450	Soils and Foundations							DA													
CMGT 452	LEED in Sustainable Construction																				
CMGT 455	Principles of Construction Management	R	DA	R						DA						DA	DA				
CMGT 456	Principles of Heavy Civil Construction Management	R	DA	R						DA						DA	DA				
CMGT 460	Concrete Construction	DA																			
CMGT 461	Pavement Design and Construction	DA																			
CMGT 481	Construction Management Capstone		DA	DA	DA	DA				DA											
CMGT 495A	Construction Management Competition Preparation (Fall)		DA	DA	DA	DA				DA											
CMGT 495B	Construction Management Competition Preparation (Winter)		DA	DA	DA	DA				DA											
CMGT 485	Construction Accounting, Finance, and Contemporary Topics														DA						
CMGT 488	Professional Certification				R																
COM 345	Business & Professional Speaking		R																		
ETSC 161	Architectural CAD																				
ETSC 301	Engineering Project Cost Analysis																				
ETSC 311	Statics																				
ETSC 312	Strengths of Materials																				DA
ETSC 490	Cooperative Education																				
SHM 323	Construction Safety			DA																DA	
AC Exam	AIC Exam						DA-1	DA-1	DA-1				DA-2	DA-1	DA-1	DA-1	DA-1	DA-1	DA-1	DA-1	DA-1
Exit Survey	Senior Exit Survey	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA

## Assessment of Program and Student Learning Outcomes Plan

### Program Objective:

Assessment	Outcomes	Method of Assessment	Frequency
Number of students admitted into the professional CMGT program each year to be between 36 to 42 students per year.	All	Graduation rates are used as an assessment to establish the retention of the students once accepted into the major.	Yearly
Review of student work within each PLO using SLOs for the designated course.	All	Faculty review student performance on selected student work to assure outcomes are being met on assignments, exams, and projects. Faculty address and report strengths and weaknesses within their continuous quality improvement reports and revise content as needed.	Yearly
Number of recruiting companies at the Engineering Technologies, Safety, and Construction (ETSC) career fair.	All	Quantitative data is used to measure the recruiting efforts of companies interested in our graduates.	Yearly
Placement of graduates above 90%.	All	Faculty review senior exit interview questionnaires.	Yearly
Results of American Institute of Constructors Exam (AIC) Exam as a Direct Assessment (DA) where all students must pass with 60% to graduate each year. for	SLOs 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, and 20.	Scores are used to determine if students within the program are meeting the 60% pass rate threshold to graduate. Comparisons are made with how the program compares to the national average.	Yearly
Senior Exit Survey	SLOs 1-20, preparation to compete with other graduates, comparison	Faculty review questionnaires to determine strengths	Yearly

	on balance between program theory and application	and weaknesses within the program and student learning outcomes and address these outcomes during regularly scheduled faculty meetings and share the data with the industry advisory board. Data is used by faculty revise course objectives and measurements.	
Alumni Survey	SLOs 1-20 and assess relevancy of curriculum to current careers	Faculty will review data to determine if there are changes to be made to the program to stay current and relevant	Every three years

**Program Learning Objective Plan:**

Below is the assessment methodology for each student learning outcome as they are mapped to each course and their outcome with the assessment strategy or tool for each course for the SLOs.

1. Create written communications appropriate to the construction discipline.

Assessment Location	Assessment Item	Performance Criteria
CMGT 344/345	Use estimates as written plan for communication	Average >80%
CMGT 460/461	Write technical lab report.	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

2. Create oral presentations appropriate to the construction discipline.

Assessment Location	Assessment Item	Performance Criteria
CMGT 346/347	Presentation to class on technical topic	Average >80%
CMGT455/456	Presentation on project management topic	Average >80%
CMGT 495 A & B/481	Presentation to construction professionals	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

3. Create a construction project safety plan.

Assessment Location	Assessment Item	Performance Criteria
CMGT 495 A & B/481	Create a safety plan	Average >80%
SHM 323		Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

4. Create construction project cost estimates.

Assessment Location	Assessment Item	Performance Criteria
CMGT 344/345	Create an estimate for a construction project	>80%
CMGT 495 A & B/481	Create an estimate for a construction project	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

5. Create construction project schedules.

Assessment Location	Assessment Item	Performance Criteria
CMGT 447	Develop a schedule for a construction project with at least 100 activities	Average >80%
CMGT 495 A & B/481	Create a project schedule for a construction project with at least 100 activities	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

6. Analyze professional decisions based on ethical principles.

Assessment Location	Assessment Item	Performance Criteria
CMGT 444/445	Analyze ethical article and provide synopsis	Average >80%
AC Exam	Question on AC exam	Average >75%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

7. Analyze construction documents for planning and management of construction processes.

Assessment Location	Assessment Item	Performance Criteria
CMGT 450	Read and analyze a geotechnical report	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

8. Analyze methods, materials, and equipment used to construct projects.

Assessment Location	Assessment Item	Performance Criteria
CMGT 346/347	Series of homework assignments and tests	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

9. Apply construction management skills as a member of a multidisciplinary team.

Assessment Location	Assessment Item	Performance Criteria
CMGT 455/456	Presentation as member of team playing role	Average >80%
CMGT 495 A & B/481	Presentation as member of team	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

10. Apply electronic-based technology to manage the construction process.

Assessment Location	Assessment Item	Performance Criteria
CMGT 201	Series of assignments using construction electronic-based technology	Average >80%
CMGT 447	Create schedule components in Excel and Microsoft Project	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

11. Apply basic surveying techniques for construction layout and control.

Assessment Location	Assessment Item	Performance Criteria
CMGT 267	Perform building or bridge layout	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.

Assessment Location	Assessment Item	Performance Criteria
CMGT 444/445	Create response to case study	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%



13. Understand construction risk management.

Assessment Location	Assessment Item	Performance Criteria
CMGT 444/445	Analyze contract create response	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

14. Understand construction accounting and cost control.

Assessment Location	Assessment Item	Performance Criteria
CMGT 485	Homework assignment addressing accounting and cost control	Average > 80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

15. Understand construction quality assurance and control.

Assessment Location	Assessment Item	Performance Criteria
CMGT 455/456	Answer to question on exam	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

16. Understand construction project control processes.

Assessment Location	Assessment Item	Performance Criteria
CMGT 455/456	Answers to questions on exam	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.

Assessment Location	Assessment Item	Performance Criteria
CMGT 444/445	Exam questions	Average >80%
SHM 323	Exam questions	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

18. Understand the basic principles of sustainable construction.

Assessment Location	Assessment Item	Performance Criteria
CMGT 101	Homework assignment	Average >80%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

19. Understand the basic principles of structural behavior.

Assessment Location	Assessment Item	Performance Criteria
ETSC 312	Question on homework assignment	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

20. Understand the basic principles of mechanical, electrical and piping systems.

Assessment Location	Assessment Item	Performance Criteria
CMGT 320	Questions on exam	Average >80%
CMGT 442/443	Questions on exam	Average >80%
AC Exam	Question on AC exam	>70%
Senior Exit Survey	Question on survey on how well the student attained the measure.	>75%

### Assessment Implementation Plan

From the Program Assessment Plan, each year data is collected from several instruments and used for the evaluation of the program.

Instrument	Collection	Review
CMGT Student Applications	April 20 each year	Reviewed prior to advising for acceptance to the program (Goal: 42/year)
Student work	Each year	Review reviewed by industry on a three-year cycle (1/3 each year)
Employer Survey	Each year	Each year after career fair
Recruiting companies	End of academic year	Each year
Alumni Survey	Every 3 years	Every 3 years
AC Exam Results	Each year	Each year
Senior Exit Survey	Each year	Beginning of Fall quarter

In the Fall, at the beginning of each academic year the program will be reviewed by all construction management faculty. During this meeting all of the PLOs will be evaluated to make sure they are current and identify if changes need to be made. If changes are to be made, the program will identify the changes and present them to the appropriate stakeholders. The changes will also be presented to the IAB to identify their relevancy and currency within the industry. Recommendations, improvements,

corrective actions, and changes will be recorded and shared with the appropriate stakeholders associated with the program. Course recommendations and changes are documented using the form shown below.



## CWU Construction Management Advisory Council Course Review

Course Number and Title	
Prerequisites	
Current Date	
Last Review Date	
Quarter Offered	
Typical Enrollment	
Reviewer	
Company and Title	

General	Comments
Is the course tied to the mission of the program?	

<p>Is the course logically organized? Do the topics appear to be presented in proper sequence?</p>	
<p>Is the course comprehensive? Are there any topics that seem to be missing? Are the course topics covered in adequate detail and does it appear that the proper amount of time is spent on each topic?</p>	
<p>Is the course material relevant and contemporary to the construction industry?</p>	
<p>Is the student work neat, professional and well presented?</p>	
<p><b>Labs (if applicable)</b></p>	<p><b>Comments</b></p>
<p>Are labs relevant to lecture? Are they well organized and do they appear to be useful learning tools? Does the inclusion of labs in this course appear to add to student learning?</p>	
<p>Lab suggestions</p>	

<b>Software (if applicable)</b>	<b>Comments</b>
Is the software contemporary and adequate to meet the needs of students as they enter the industry? Does the use of software in this course appear to add to student learning?	
<b>Overall</b>	<b>Comments and Suggestions</b>
Provide any overall comments and suggestions that may be used to improve this course.	

**Faculty Peer Evaluation Form**



**Department of Engineering Technologies, Safety and Construction**

Month Day, 202x

Presenter  
Central Washington University  
Ellensburg, WA 98926

**Evaluation of Instruction**

<b>Date:</b>	<b>Faculty Member Observed:</b>
Activity Observed:	
Course number and title:	
Approximate Number of Students:	
Topic:	Topic

**Description of course delivery:**

1. Identify and describe strengths you observed:
  - Strength
  -
2. Suggested improvements:
  - Improve

**Conclusion:** Conclusion

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Evaluator

Below is a teaching assessment chart to provide metrics on lesson organization, class conduct, and classroom environment.

### Teaching Assessment Chart

	Needs Work	Good	Excellent	Remarks
<b>Technical Expertise</b>				
Command of the Subject Matter				
<b>Lesson Organization</b>				
Lesson Objectives				
Organization of Boards and Classroom Activities				
<b>Conduct of the Class</b>				
Enthusiasm, Energy, and Confidence				
Orientation to the Subject Matter				
Clarity of Presentation (boards, viewgraphs, etc.)				
Clarity & Precision of Explanations				
Questioning & Answering Questions				
Contact with Students				
Visual Aids and Demonstrations				
Time Management				
Appropriate Use of Textbook				
<b>The Classroom Environment</b>				
Classroom Appearance				Clean
<b>Overall Assessment:</b> Are the students who attended this class Adequately prepared to accomplish the Lesson Objectives?	<input type="checkbox"/> No <input type="checkbox"/> Not sure <input type="checkbox"/> Yes			

**Discussion With Students:**

## Senior Exit Survey

The senior exit survey identifies both demographic and indirect assessment information about the program. The information below identifies the scale and questions used for the indirect assessment for the program to include two general questions about the program and the twenty (20) student learning outcomes on a scale of 1 to 5 (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree).

### Demographic Information:

1. Name (optional):
2. Graduation date:
3. What previous construction-related experience have you had?
4. Why did you choose the CMGT program at CWU?
5. What other college level education have you had prior to coming to CWU?
6. How did you hear about the CWU program?
7. Have you accepted a position with a company?
8. If yes, provide the following information:
  - a. Position title:
  - b. Starting salary:
  - c. Company name:
  - d. Company address:
  - e. Starting date:
  - f. How would you categorize this company (General Contractor, Heavy Civil, Specialty, etc.)?
  - g. Type of work associated with your employer (commercial, heavy-civil, residential, etc.):
  - h. Other comments about selecting company:
9. Have you interviewed? If yes, how many companies have you interviewed with?

### Indirect Assessment Information:

10. My education/studies prepared me:
  1. My education/studies prepared me to compete with graduates from other construction programs.
  2. My education/studies at CWU contained a good balance between theory and application.

### Questions below are related to the indirect assessed item student learning outcomes (SLOs):

1. My education/studies prepared me to create written communications appropriate to the construction discipline.
2. My education/studies prepared me to create oral presentations appropriate to the construction discipline.
3. My education/studies prepared me to create a construction safety plan.
4. My education/studies prepared me to create construction cost estimates.



5. My education/studies prepared me to create construction project schedules.
6. My education/studies prepared me to analyze professional decisions based on ethical principles.
7. My education/studies prepared me to analyze construction documents for planning and management of construction processes (plan reading, contract documents).
8. My education/studies prepared me to analyze methods, materials, and equipment used to construct projects.
9. My education/studies prepared me to apply construction management skills as a member of a multi-disciplinary team.
10. My education/studies prepared me to apply electronic-based technology to manage the construction process (spreadsheets, estimating, scheduling, CAD).
11. My education/studies prepared me to apply basic surveying techniques for construction layout and control.
12. My education/studies prepared me to understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13. My education/studies prepared me understand risk management.
14. My education/studies prepared me understand construction accounting and cost control.
15. My education/studies prepared me to understand construction quality assurance and control.
16. My education/studies prepared me to understand construction project control processes.
17. My education/studies prepared me to understand the legal implications of contract, common, and regulatory law to manage a construction project.
18. My education/studies prepared me to understand the basic principles of a sustainable construction.
19. My education/studies prepared me to understand the basic principles of structural behavior (statics, strengths of materials, soils, etc.).
20. My education/studies prepared me to understand the basic principles of mechanical, electrical, and piping systems.

**General Program Feedback Questions:**

11. What specific curriculum changes (course additions, course deletions, course changes) would you recommend?
12. What do you consider to be the major strengths or most positive aspects of the construction management program?
13. What suggestions (physical facilities, industry involvement, career fair, etc.) would you like to make relative to making improvements to the construction management program?
14. Other comments?