

**University of Washington
Department of Construction Management**



**Assessment Implementation Plan
Bachelor of Science in Construction Management Program**

This Assessment Implementation Plan Academic Quality Improvement Plan provides details, guidelines, and procedures for continuous quality improvement for the undergraduate Bachelor of Science in Construction Management (i.e., the Degree Program).

Educational Unit Mission and Vision

- The department’s mission statement is: “The educators and researchers of the Department of Construction Management serve and inspire students, industry, and community.”
- The department's vision is “to be recognized as a global leader in construction management innovation and practice.”

9.3.1 Mission Statement of the Degree Program

The Degree Program fulfills the department’s mission through its mission: “To prepare individuals to assume technical and managerial positions in the construction and related industries by providing high-quality education. This includes educating students in applying scientific, mathematical, and management principles and advanced technology to planning, designing, building, and retrofitting facilities and infrastructures. We provide instruction in green building and sustainable construction principles, computer-assisted digital tools and building information modeling (BIM), construction methods and materials, site analysis, structural principles, contracting, field and project management, graphic communications, cost estimating, project planning and control, and applicable laws and regulations.”

9.3.2 Degree Program Objectives

The degree program objectives are part of the strategic theme for the undergraduate program and will be reviewed annually. These objectives are related to the five strategic goals for the undergraduate program, which are listed below with shared objectives and measurable achievements (see *Table 1*).

- Retain accreditation by the American Council for Construction Education (ACCE)
- Recruit and retain a competent cohort and foster inclusivity
- Keep curriculum responsive and influential to best practices
- Continue excellence in providing career services
- Support high level of academic performance

Table 1

Goal	Objectives	Measurable Achievements	Responsible Parties
Goal 2.1: Retain accreditation.	Organize the department's reaccreditation efforts.	Establish an accreditation committee and appoint an accreditation lead.	Chair
	Increase faculty and staff awareness of accreditation processes.	Number of faculty/staff involved in accreditation committee; number of faculty/staff involved in review of final documents; number of faculty/staff who have attended ACCE training conferences.	Chair & Accreditation Lead
	Emphasize the importance of the quality of instruction provided to students.	Number of faculty peer reviews conducted. Number of part-time faculty attending ACCE TLP workshops. Number of part-time faculty holding ACCE-TLP certification.	Chair
Goal 2.2: Recruit and retain a competent cohort and foster inclusivity.	Reduce barriers to entering the major.	Implement curriculum change to eliminate unnecessary entrance barriers; implement application pathway change.	Chair, UPC, UPA
	Recruit more applicants from 1st generation and underrepresented groups.	Number of 1st generation; Number of URM students; number of female students.	UPA
	Establish partnerships with community colleges.	Number of community colleges with direct liaisons; annual number of meetings/conferences with community colleges; number of transfer students; number of events participating in UW-wide community college initiatives.	UPA, Chair
	Optimize the use of scholarships for undergraduate student recruitment.	\$ amount available for student recruitment; number of annual recipients of recruitment scholarships.	Chair, UPA, CBE Advancement
	Meet enrollment expectations.	Annual number of students enrolled by cohort.	Chair, UPA, UPC, undergraduate committee
	Expand access to construction management minor.	Number of students in the minor; number of UW campuses represented among students in the minor.	Chair, UPA
Goal 2.3: Keep curriculum responsive and influential to best practices.	Ensure the program curriculum meets accreditation requirements while striving to achieve high-quality education.	No. of Strengths/Weaknesses/Concerns listed in accreditation report.	Chair & Accreditation Lead
	Annually review curriculum and course content in concert and	Annual number of CIAC Executive Committee meetings where the undergraduate curriculum is discussed;	Chair, UPA, UPC, undergraduate committee, CIAC

Goal	Objectives	Measurable Achievements	Responsible Parties
	with feedback from relevant stakeholders to ensure that contemporary and emergent issues are addressed.	annual number of the CIAC undergraduate subcommittee meetings; annual number of the CM Undergraduate Committee meetings.	undergraduate subcommittee
	Expand experiential education opportunities within the curriculum.	Number of classes with applied laboratory component; number of classes with site visits incorporated	Chair, CM Faculty, CIAC members
	Support extracurricular activities that align with the curriculum.	Number of students participating in competition; number of students participating in construction-related Registered Student Organizations (RSO)	Chair, CM Faculty, CIAC members, UPA, Admin
Goal 2.4: Continue pursuing excellence in providing career services.	Retain and reinforce industry presence at the department's career expo.	Number of career expo firms; Number of career expo firms by group (GC, HC, SC, owner, designer, vendor, etc.)	Chair, CIAC members, UPA, Admin
	Identify metrics and track performance on an annual basis and by cohort.	Full-time placement percentage	UPA
	Retain and reinforce a set of seminars, workshops, guest lectures, panels, and coaching sessions on career orientation.	Number of students participating in workshops; number of classes with guest lectures, industry panels, and coaching sessions on career orientation	UPA, CM Faculty
Goal 2.5: Support a high level of academic performance.	Increase out-of-class support to students.	Quarterly cohort meetings; number of students in CBE mentorship program	UPA
	Maintain and exceed 95% graduation rate (within two years from junior start).	Percentage of students graduating within 2 years from junior start	Chair, UPA, UPC
	Maintain and exceed 99% graduation rate (within three years from junior start).	Percentage of students graduating within 3 years from junior start	Chair, UPA, UPC
	Create opportunities for interdisciplinary collaboration.	Number of faculty involved in BE classes; number of students taking BE classes	Chair, Faculty, UPA, UPC

In addition to the Degree Program Objectives listed above, the following Student Learning Outcomes (SLOs) will be assessed and reviewed, and results will be acted on annually:

- SLO 1. Create written communications appropriate to the construction discipline.
- SLO 2. Create oral presentations appropriate to the construction discipline.
- SLO 3. Create a construction project safety plan.
- SLO 4. Create construction project cost estimates.
- SLO 5. Create construction project schedules.
- SLO 6. Analyze professional decisions based on ethical principles.
- SLO 7. Analyze methods, materials, and equipment used to construct projects.
- SLO 8. Apply electronic-based technology to manage the construction process.
- SLO 9. Apply basic surveying techniques for construction layout and control.
- SLO 10. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
- SLO 11. Understand construction accounting and cost control.
- SLO 12. Understand construction quality assurance and control.
- SLO 13. Understand construction project control processes.
- SLO 14. Understand the legal implications of contract, common, and regulatory law to manage a construction project.
- SLO 15. Understand the basic principles of sustainable construction.
- SLO 16. Understand the basic principles of structural behavior.
- SLO 17. Understand the basic principles of HVAC, electrical and plumbing systems.

Student work will be evaluated for a minimum level of conformance to the program's performance criteria standard.

- Appendix A shares detailed instructions for performing a direct assessment. Find individual assessment tools for specific SLOs in their respective folders.
- Appendix B shares detailed instructions for submitting direct assessments.
- Appendix C shares the detailed indirect assessment tool.
- Appendix D maps the SLO to the Course Learning Outcomes (CLOs).

The minimum conformance level is limited to the 17 SLOs being assessed through one direct and one indirect assessment. We plan to directly evaluate each SLO once during a student's tenure, except for SLO 17, which is assessed twice in two classes offered in the same quarter. Then, we will measure all SLOs indirectly near graduation through a student survey instrument.

Assessment Tools and Frequency of Student Learning Outcomes Assessment

The curriculum map guides what class Student Learning Outcomes (SLOs) are assessed quarterly (see *Table 2*).

Table 2

Year	Quarter	Code	Title	Credits	Student Learning Outcomes Curriculum Mapping																	
					SLO 1	SLO 2	SLO 3	SLO 4	SLO 5	SLO 6	SLO 7	SLO 8	SLO 9	SLO 10	SLO 11	SLO 12	SLO 13	SLO 14	SLO 15	SLO 16	SLO 17	
Junior	Autumn	ARCH 320	Introduction to Structures I	3	I	I														I		
		CM 301	Construction Communications	3	DA	I																
		CM 310	Introduction to the Construction Industry	3											DA							
		CM 313	Construction Methods and Materials I	4		I						I						I			DA	I
		CM 320	Construction Contract Documents	3																		
						<i>Break</i>																
	Winter	ARCH 321	Introduction to Structures II	3	R	R															R	
		CM 335	Sustainable Construction	3	R	R															R	
		CM 331	Construction Estimating I	3		R		I														
		CM 323	Construction Methods and Materials II	5	R							R					DA				R	
						<i>Break</i>																
	Spring	CM 321	Mechanical Systems in Buildings	3				R			R				R							DA
		CM 322	Electrical Systems in Buildings	3				R	I		R											DA
		CM 332	Construction Equipment Management	3								DA	I			I						
CM 333		Construction Safety	3	R	R	DA				I									I			
CM 334		Construction Surveying	2											DA								
CM 420		Temporary Structures	3																		DA	
					<i>Summer Break</i>																	
Senior	Autumn	CM 312	Construction Accounting	3											DA							
		CM 410	Construction Estimating II	4		R		DA														
		CM 411	Project Planning and Control	4					DA													
		CM 414	Virtual Construction	3	R	R		R	R		R	DA		R		R						
						<i>Break</i>																
	Winter	CM 421	Project Management I	3				R	R	R	R				R		R	R				
		CM 422	Computer Applications in Construction	2					R						R						R	
		CM 432	Soils and Foundations	3								R									R	
		CM 434	Lean Project Planning	3													DA					
		CM 498	Pre-capstone	2				R	R		R			R				R				
						<i>Break</i>																
	Spring	CM 412	Construction Practice	2	R	R					R											
		CM 423	Construction Law	3							DA									DA		
		CM 431	Project Management II (Capstone)	5	R	DA	R	R	R		R	R					R					

Exit Survey	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
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I	Introduced
R	Reinforced
DA	Direct Assessment
IA	Indirect Assessment

9.3.3 (a) Assessment Tools. List the Assessment Tools used by the Degree Program to measure the achievement of Degree Program Objectives and SLOs’.

The following tables list the specifics of the assessment tools used (9.3.3) and the performance criteria (9.3.4) to measure student learning outcomes and degree program objectives. Additional information on learning outcomes assessment tools are attached (see Appendices).

SLO 1. Create written communications appropriate to the construction discipline.

<i>Where assessed/ Who</i>	<i>Assessment item (9.3.3)</i>	<i>Performance Criteria (9.3.4)</i>
CM 301 Construction Communications/ Instructor	Proposal cover letter	At least 80% of the students will earn at least 80%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 2. Create oral presentations appropriate to the construction discipline.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 431 Capstone/ Instructor	Capstone oral presentation	At least 85% of the students earn at least 90%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 3. Create a construction project safety plan.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 333 Safety/ Instructor	Safety plan for a construction project	At least 80% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 4. Create construction project cost estimates.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 410 Construction Estimating II / Instructor	Three individual assignments: budget estimate for self-performed concrete, budget estimate for self-performed steel, and general conditions estimate.	At least 85% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 5. Create construction project schedules

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 411 Project Planning and Control/ Instructor	Final exam question to develop a conceptual general job plan and schedule for a construction project	At least 85% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 6. Analyze professional decisions based on ethical principles

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 423/ Instructor	Ethics paper	At least 85% of the students earn at least 90%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 7. Analyze methods, materials, and equipment used to construct projects.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 332 Construction Equipment Management/ Instructor	Earthwork case study in the final examination	At least 80% of students earn at least than 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 8. Apply electronic-based technology to manage the construction process

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 414 Virtual Construction / Instructor	BIM Execution Proposal Video	At least 85% of the students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 9. Apply basic surveying techniques for construction layout and control.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 334 Construction Surveying/ Instructor	Midterm – Individual Take-Home Exercise	At least 80% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 10. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 310 Introduction to the Construction Industry/ Instructor	Student interview papers	At least 80% of students earn at least 80%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 11. Understand construction accounting and cost control

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 312 Construction Accounting/ Instructor	Cost Report	At least 85% of the students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 12. Understand construction quality assurance and control

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 323 Construction Methods and Materials II/ Instructor	Pre-lab assignment (online quizzes)	At least 85% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 13. Understand construction project control processes

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 434 Lean Project Management/ Instructor	Two questions in the first exam	At least 85% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 14. Understand the legal implications of contract, common, and regulatory law to manage a construction project.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 423 Construction law/ Instructor	Final examination (Take Home Written Portion)	At least 85% of the students earn at least 90%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 15. Understand the basic principles of sustainable construction

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 313 Sustainable Construction/ Instructor	Individual self-reflection paper on sustainability & life-cycle issues in the built environment	At least 80% of students earn at least 80%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 16. Understand the basic principles of structural behavior.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 420 Temporary Structures/ Instructor	Series of questions on midterm exam	At least 80% of students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

SLO 17. Understand the basic principles of HVAC, electrical and plumbing systems.

<i>Where assessed/ Who</i>	<i>Assessment item</i>	<i>Performance Criteria</i>
CM 321 Mechanical Systems in Buildings/ Instructor	Response to Mechanical RFP Assignment	At least 80% of the students earn at least 85%
CM 322 Electrical Systems in Buildings/ Instructor	Response to Electrical RFP Assignment	At least 80% of the students earn at least 85%
Exit Survey/ Student	Question on how well students feel they can accomplish SLO	Greater than 3.5 on a 5-point scale

9.3.3 (b) Assessment Implementation Plan. The plan includes what data is collected each year (read *i. and Table 2, p. 5*), the plan to regularly evaluate and review this data (read *ii.*), and the conclusions to be drawn from this data, (read *iii.*). Included are those constituencies involved in the data review process.

i. The assessment data is submitted via Microsoft Forms, (*method used for data collection*). Assessment evaluation data are due to the department chair by the end of each month after a quarter ends, except for the Spring quarter, when they are due by June 15 (*frequency of data collection*). The senior exit survey is conducted as part of the CM 431 Project Management II (Capstone) class, and results are available by June 15 each year. The department chair will collate the program assessment data and degree program objectives data for review at the annual department and CIAC retreats.

ii. The assessment and evaluation process

- A summer meeting of the CIAC Undergraduate Committee,
- The annual faculty retreat, which is usually scheduled at the beginning of each academic year between September 15 and September 25, and
- The annual Construction Industry Advisory Council (CIAC) retreat, which is usually scheduled at the beginning of each academic year between October 1 and October 15.

iii. Recommendations, improvements, corrective actions, and changes will be recorded and reflected in interim department memoranda¹ while waiting to be incorporated into future versions of this document.

¹ We expect to revise this document every 3 years. If changes would be needed before the next 3-year revision, the Department Chair will issue a Department Memorandum that summarizes and communicates the necessary changes to all stakeholders who need to be aware of such changes.

Appendix A

Detailed Instructions for Performing Direct Assessments

If a class is used to perform a direct assessment for an SLO, the instructor needs to identify:

- a. which individual assignment(s) are used to assess the SLO,
- b. a performance criterion mark (or score,) and
- c. the minimum percentage of CM students² meeting the performance criterion mark.

Regarding (a), the department has developed some rules of thumb to help identify an assignment that is compatible with the specific SLO's educational objective:

- **Create SLO:** Ideally, the instructor could use an individual project-based assignment, such as a small project or homework. If a team assignment is selected, the evaluation approach must be designed to allow the instructor to assess a student's individual work "to create" the assignment. Note: An instructor should consult the department's accreditation committee lead if they want to use a team project or a non-project-based assignment.
- **Analyze SLO:** Ideally, the instructor could use an individual project-based assignment, such as a small project, homework, or paper could be used. If a team assignment is selected, the evaluation approach must be designed to allow the instructor to assess a student's individual work by performing some SLO-relevant "analysis" on the assignment. Note: An instructor should consult the department's accreditation committee lead if they want to use a team project or a non-project-based assignment.
- **Apply SLO:** The instructor could use a hands-on individual assignment, such as a problem or case study, in homework, quizzes, or final exams. If a team assignment is selected, the evaluation approach must be designed to allow the instructor to assess a student's individual work by performing some SLO-relevant "application" on the assignment. Note: An instructor should consult the department's accreditation committee lead if they want to use a team assignment.
- **Understand SLO:** the instructor could use any individual assignment, including multiple-choice questions in a quiz, the final exam, or homework. If a team assignment is selected, the evaluation approach must be designed to allow the instructor to assess a student's individual work by performing some SLO-relevant "understanding" on the assignment. Note: An instructor should consult the department's accreditation committee lead if they want to use a team assignment.

Regarding (b) and (c), we use a simple, standardized approach. The values are lower when we use a class early in the program and higher later in the program. See the table below.

	Junior Year			Senior Year		
	Autumn	Winter	Spring	Autumn	Winter	Spring
Performance Criterion (set mark)	80%	80%	80%	85%	85%	85%
Threshold (Minimum % of CM students meeting performance criterion mark on designated assignment(s))	80%	80%	85%	85%	85%	90%

² Note: Our class often include students in the accredited CM major, students in the non-accredited dual degree program, and other students, such as CM minor or from other majors. **SLO assessment data should only be reported for CM majors.**

Example: CM 321 and CM 322 require students to submit an RFP for the mechanical (CM 321) and electrical (CM 322) scopes. These classes are offered in the spring quarter and are usually taken in the junior year.

The *Required SLO* sections in their respective syllabi should read as follows:

- CM 321:
SLO 17 - “Understand the basic principles of HVAC, electrical and plumbing systems”.

This SLO will be assessed through individual student’s responses to the Mechanical RFP assignment. The performance criterion is that 80% of the students shall earn at least an 85% mark on the designated assignment.

- CM 322:
SLO 17 - “Understand the basic principles of HVAC, electrical, and plumbing systems”.

This SLO will be assessed through individual student’s responses to the Electrical RFP assignment. The performance criteria are 80% of the students shall earn at least 85% on the designated assignment.

Appendix B

Detailed Instructions for Submitting Direct Assessments

Toward the end of each quarter, the department's accreditation committee lead will email each instructor who teaches a required course requesting to submit the following information via Microsoft Forms.

- All instructors of required courses: A syllabus formatted according to the department's template that incorporates all required UW language and includes some guidance on how to link ACCE SLOs into the course learner outcomes (when applicable).
- Instructors of courses with direct assessment:
 - Outcome (e.g., X% of students earned at least Y%):
 - With Y% = Performance Criterion, (set mark)
 - If X% is less than the Threshold, the instructor is also asked to provide a short self-reflection on how the shortfall could be addressed in future offerings or other factors that may have affected the outcome.
 - A copy of each assignment used to measure the SLO assessed
 - A copy of the rubric used for evaluating each assignment
 - A copy of a graded student submission for each assignment used to measure the SLO

Appendix C

Detailed Indirect Assessment Tool Senior Exit Survey

This survey is designed to determine graduating senior's opinion on how well they accomplished the SLO.

On a scale of 1 to 5, please rate your level of agreement with each of the 17 statements below and share how well the CM department prepared you with the necessary knowledge and skill. Select the most appropriate rating for each statement, (1 = strongly disagree and 5 = strongly agree).

As part of earning a Bachelor of Science in Construction Management degree from UW, I feel I have learned the following skills: (1 = not very well, 2 = below expectation for entry level position, 3 = just enough skill and knowledge to start work, 4 = above average knowledge, 5 = outstanding level of knowledge gained)

Student Learning Outcomes – Indirect Assessment

- SLO 1. I am able to create written communications appropriate to the construction discipline.
- SLO 2. I am able to create oral presentations appropriate to the construction discipline.
- SLO 3. I am able to create a construction project safety plan.
- SLO 4. I am able to create construction project cost estimates.
- SLO 5. I am able to create construction project schedules.
- SLO 6. I am able to analyze professional decisions based on ethical principles.
- SLO 7. I am able to analyze methods, materials, and equipment used to construct projects.
- SLO 8. I can apply electronic-based technology to manage the construction process.
- SLO 9. I am able to apply basic surveying techniques for construction layout and control.
- SLO 10. I understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
- SLO 11. I understand construction accounting and cost control.
- SLO 12. I understand construction quality assurance and control.
- SLO 13. I understand construction project control processes.
- SLO 14. I understand the legal implications of contracts, common, and regulatory law to manage a construction project.
- SLO 15. I understand the basic principles of sustainable construction.
- SLO 16. I understand the basic principles of structural behavior.
- SLO 17. I understand the basic principles of HVAC, electrical and plumbing systems.

Note: Additional questions are included in the survey to gather student feedback on other facets of the department's operations, including access and availability of the CM instructor, the CM department chair, and undergraduate advisor, our career service offerings, instructional and meeting spaces at CERC, and communications. Last, we gather information on students' plans after graduation, including if they have secured a full-time job, what their annual starting salary is, or if they plan to pursue additional education.

Selected Degree Program Objectives

1. If you have secured a full-time job after graduation, what is your annual starting salary?
2. If you have secured a full-time job after graduation, what is the name of your employer?
3. If you have secured a full-time job after graduation, what is your job title?
4. If you are attending graduate school after graduation, which program are you attending?
5. How many student competitions did you participate in?
6. How many student chapters did you participate in?

Appendix D - Map SLO to CLO

ACCE SLO			Course Learning Outcomes (CLO)
No	ACCE Student Learning Outcome	ACCE Direct and Indirect Assessment	
1	Create written communications appropriate to the construction discipline.	CM 301 (DA) + Exit Survey (IA)	CM 301, CM 333, CM 334, CM 412, CM 431, CM 432, CM 414.
2	Create oral presentations appropriate to the construction discipline.	CM 431 (DA) + Exit Survey (IA)	CM 301, CM 313, CM 333, CM 331, CM 412, CM 413, CM 431, CM 414.
3	Create a construction project safety plan.	CM 333 (DA) + Exit Survey (IA)	CM 333, CM 421, CM 431.
4	Create construction project cost estimates.	CM 410 (DA) + Exit Survey (IA)	CM 312, CM 321, CM 322, CM 331, CM 410, CM 414, CM 415, CM 421, CM 431,
5	Create construction project schedules.	CM 411 (DA) + Exit Survey (IA)	CM 313, CM 322, CM 411, CM 421, CM 422, CM 431.
6	Analyze professional decisions based on ethical principles.	CM 423 (DA) + Exit Survey (IA)	CM 310, CM 312, CM 331, CM 333, CM 410, CM 412, CM 414, CM 421, CM 423.
7	Analyze methods, materials, and equipment used to construct projects.	CM 332 (DA) + Exit Survey (IA)	CM 313, CM 322, CM 323, CM 332, CM 334, CM 415, CM 420, CM 428, CM 431.
8	Apply electronic-based technology to manage the construction process.	CM 414 (DA) + Exit Survey (IA)	CM 411, CM 414.
9	Apply basic surveying techniques for construction layout and control.	CM 334 (DA) + Exit Survey (IA)	CM 334.
10	Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	CM 310 (DA) + Exit Survey (IA)	CM 310, CM 321, CM 322.
11	Understand construction accounting and cost control.	CM 312 (DA) + Exit Survey (IA)	CM 312, CM 332
12	Understand construction quality assurance and control.	CM 323 (DA) + Exit Survey (IA)	CM 313, CM 323, CM 334, CM 431, CM 414, CM 434.

13	Understand construction project control processes.	CM 434 (DA) + Exit Survey (IA)	CM 411, CM 434.
14	Understand the legal implications of contract, common, and regulatory law to manage a construction project.	CM 423 (DA) + Exit Survey (IA)	CM 310, CM 333, CM 411, CM 423.
15	Understand the basic principles of sustainable construction.	CM 313 (DA) + Exit Survey (IA)	CM 313, CM 335.
16	Understand the basic principles of structural behavior.	CM 420 (DA) + Exit Survey (IA)	CM 313, CM 420.
17	Understand the basic principles of HVAC, electrical and plumbing systems.	CM 321 (DA) & CM 322 (DA) + Exit Survey (IA)	CM 321, CM 322.