



Washington State University Construction Management

Academic Quality Improvement Plan Report for AY 21/22 Bachelor of Science in Construction Management

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This report highlights the findings of the AY 2021/22 assessment cycle. It serves as the basis for the faculty and the Construction Management Advisory Board (CMAB) review during the fall of 2022. Recommendations and any plans for updates will be documented in "Appendix C - Observations & Recommendations Report".

1. Strategic Plan for the Educational Unit

The strategic plan for the Washington State University's Construction Management program is found in a separate document titled "CM Strategic Plan 2020-2025" dated November 17, 2020.

2. Degree Program Assessment Plan

A comprehensive assessment plan provides complete continuous improvement of our undergraduate degree program.

2.1 Undergraduate Program Mission Statement

The WSU Construction Management programs mission is to educate, prepare, and provide opportunities for our students to become valuable resources to our economy, the construction management profession, and the built environment.

2.2 Degree Program Objectives

The following objectives are part of the strategic plan that relates to the undergraduate program and will be reviewed annually. The framework of these objectives are to provide accessible, challenging, quality, and contemporary educational program that prepares individuals to assume technical and managerial positions in the construction and related industries. Specific objective measurements:

- Number of students admitted each year should be between 50-55: **Fall 2021 @ 52**
- Placement rate of graduates should be above 95%: **Spring 2022 @ 98% and Summer 2022 @ 100%**
- Accreditation by American Council for Construction Education (ACCE) is maintained: **Yes, re-accredited in February 2022 for the full, 6-year period with 1st & 3rd year reports required**
- Provide experiential learning opportunities for students: **Internship rates @ 95% for 3rd year and 80% for 2nd year students in addition to required course projects/requirements (estimate/schedule/capstone proposal)**

2.3. Program Learning Outcomes

The program learning outcomes meets and exceeds the student learning outcomes required by ACCE. In addition to the program objectives listed above the Student Learning Outcomes (SLO's) will be assessed, reviewed, and results acted on annually. Student work was assessed for a minimum level of conformance and the standard of the program's performance criteria. Individual assessment tools for specific SLO's are found in their respective electronic folders.

Minimum level of conformance is limited to the 20 SLO's being assessed one direct measure and one indirect measure. Our plan is to directly assess each of the SLO's at different times during a student's tenure and measure all SLO's indirectly.



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2.4 Assessment Tools for Student Learning Outcomes 2021/22

The following table provides a guide for which class has student learning outcomes assessed. Each student learning outcome is assessed at least twice and at least one of these assessments is a direct assessment. DA = Direct Assessment (30), IA = Indirect Assessment (20)

		1 WRITING	2 ORAL	3 SAFETY	4 ESTIMATE	5 SCHEDULE	6 ETHICS	7 DOCS	8 METHODS	9 MULTI TEAM	10 TECHNOLOGY	11 SURVEY	12 DELIVERY	13 RISK	14 ACCTG	15 QA/QC	16 CONTROLS	17 LAW	18 SUSTAIN	19 STRUCTURES	20 MEP	
CstM 102	Intro to Built Environment																					
CstM 201	Materials I								DA													
CstM 202	Materials II								DA													
CstM 222	Culture of CM																					
CstM 252	Admin & Const. Documentation	DA						DA			DA					DA						
CstM 254	Construction Graphics										DA											
CE 302	Intro to Surveying											DA										
CstM 332	Bldg. Science I																		DA			DA
CstM 333	Bldg. Science II																		DA			DA
CstM 356	Earthwork & Equipment								DA													
CstM 362	Law																		DA			
CstM 368	Safety			DA																		
CstM 370	Estimating I				DA		DA															
CstM 371	Estimating II													DA								
CstM 451	Delivery Systems												DA									
CstM 460	Const. Cost Management														DA							
CstM 462	Schedule					DA					DA											
CstM 473	Human Factors																					
CstM 475	Capstone		DA							DA												
Arch 351	Structures I																					
Arch 352	Structures II																					DA
Arch 463	Structures III																					DA
Survey	Sr. Exit Survey	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA



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Student Learning Outcomes

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.



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2.5. Assessment performance criteria and methodology for Student Learning Outcomes

The following tables list the specifics of the assessment tools that will be used and the performance criteria to measure the achievement of a student learning outcome. Specific learning outcomes assessment tools are attached. A historical (and graphical) representation of this direct assessment data can be found in Appendix A - Detailed Direct Assessment Data and Appendix B - Detailed Indirect Assessment Data. This data will be discussed and reviewed for trends thereby resulting in identification of potential changes.

1. Create Written Communication appropriate to the construction discipline

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 252 - Construction Administration & Documentation / Edwards	Individual Course Assignment #3 + Individual Course Assignment #7	At least 80% of students earn a C (70%) or better	89%	87%	100%	88%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.57	4.45	4.5	4.53

2. Create oral presentations appropriate to the construction discipline

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 473 - Human Productivity in Construction / Call	Oral Negotiations Assignment	At least 70% of students earn a C (70%) or better	not assessed	no longer assessed in course	no longer assessed in course	no longer assessed in course
CstM 475 - Senior Capstone / Cherf	Final Team Presentations - each student individually evaluated	At least 80% of students earn a C (70%) or better	85%	82%	78%	82%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.23	4.29	4.37	4.53



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3. Create a construction project safety plan

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 368 - Safety & Health / Cherf	Jobsite Safety Plan (aka, Accident Prevention Plan) for a specific project.	At least 80% of students earn a C (70%) or better	92%	86%	88%	85%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3. on scale of 1 to 5	3.89	4.04	4.00	4.02

4. Create construction project cost estimates

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 370 - Estimating I / Peschel	Final Exam - complete	At least 80% of students earn a C (70%) or better	85%	86%	90%	69%
CstM 371 - Estimating II / Peschel	Final Exam - complete	At least 80% of students earn a C (70%) or better	51%	not assessed - COVID	no longer assessed in this course	no longer assessed in this course
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.26	4.18	4.41	4.32

5. Create construction project schedules

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 102 - Intro to the Built Environment / Cherf	Individual Assignment #1 Test #2	At least 80% of students earn a C (70%) or better	95%	no longer assessed in this course	no longer assessed in this course	no longer assessed in this course
CstM 462 - Planning & Scheduling / Cherf	Individual Scheduling Projects Project A	At least 80% of students earn a C (70%) or better	79%	77%	77%	82%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.17	4.20	4.31	4.21



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6. Analyze professional decisions based on ethical principles

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 370 - Estimating I / Peschel	Individual Assignment - Ethics Case Studies	At least 80% of students earn a C (70%) or better	94%	96%	97%	98%
CstM 473 - Human Productivity in Construction / Call	Series of Questions on Quiz #2	At least 70% of students earn a C (70%) or better	not assessed	87%	not assessed - insufficient tool	no longer assessed in this course
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.47	4.43	4.56	4.56

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

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 252 - Construction Administration & Documentation / Edwards	Lab Final Exam - complete	At least 80% of students earn a C (70%) or better	61%	94%	92%	92%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.55	4.55	4.67	4.59

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

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 201 - Materials I / Edwards	Project Workbook assignment + Exam #'s 1-4	At least 80% of students earn a C (70%) or better	92%	88%	89%	92%
CstM 202 - Materials II / Call	Quizzes + Midterm Exam + Final Exam	At least 80% of students earn a C (70%) or better	86%	99%	91%	98%
CstM 356 - Earthwork & Equipment / Tafazzoli	Homework #7 + Exam #1 & Exam #2	At least 80% of students earn a C (70%) or better	86%	92%	94%	86%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.3	4.22	4.43	4.19



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9. Understand the role of the construction manager as a member of different multidisciplinary teams [updated 07/25/2021]

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 475 - Senior Capstone / Cherf	Individual student evaluations based on faculty led team meetings.	At least 80% of students earn a C (70%) or better	83%	89%	82%	82%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.32	4.29	4.41	4.54

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

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 252 - Construction Administration & Documentation / Gunderson	Individual Assignment #2, #5, and #6	At least 80% of students earn a C (70%) or better	98%	no longer assessed in this course	no longer assessed in this course	no longer assessed in this course
CstM 254 - Construction Graphics / Edwards	Midterm Exam (Lab), Final Project (Lab), and Homework Assignment – Bluebeam Revu	At least 80% of students earn a C (70%) or better	94%	86%	96%	82%
CstM 462 - Planning & Scheduling / Cherf	Individual Scheduling Projects B, C, and D	At least 80% of students earn a C (70%) or better	79%	77%	77%	84%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.43	4.45	4.57	4.65

11. Apply basic surveying techniques for construction layout and control

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CE 302 - Introduction to Surveying / Olsen	Final Lab Exam	At least 70% of students earn a C (70%) or better	41%	64%	79%	68%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	3.38	3.29	3.31	3.11



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

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 451 - Delivery Systems / Edwards	Individual Course Assignment # 4 + Exam # 1 & Exam # 2	At least 80% of students earn a C (70%) or better	95%	91%	97%	86%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.13	4.04	4.22	4.28

13. Understand construction risk management

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 460 - Construction Cost Management / Call	Module 5 Homework Assignment	At least 80% of students earn a C (70%) or better	92%	95%	99%	no longer assessed in this course
CstM 371 - Estimating II / Peschel/Edwards	Homework Assignment evaluating a bid. Changing next AY to CSTM 451.	At least 80% of students earn a C (70%) or better	not assessed	not assessed	not assessed	100%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.17	4.14	4.44	4.54

14. Understand construction accounting and cost control

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 460 - Construction Cost Management / Call	Lab Assignments + Midterm Exam + Final Exam	At least 80% of students earn a C (70%) or better	89%	83%	90%	97%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	not assessed	4.00	4.15	4.26



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15. Understand construction quality assurance and control

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 252 - Construction Administration & Documentation / Edwards	Series of Questions on Quiz #7	At least 80% of students earn a C (70%) or better	93%	78%	85%	83%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.23	4.35	4.44	4.42

16. Understand construction project control processes

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 252 - Construction Administration & Documentation / Edwards	Individual Course Assignment #3 + Individual Course Assignment #7	At least 80% of students earn a C (70%) or better	90%	87%	100%	88%
CstM 460 - Construction Cost Management / Call	Individual Assignment #1 + Series of Questions on Test #'s 2 and 3	At least 80% of students earn a C (70%) or better	94%	83%	no longer assessed in this course	no longer assessed in this course
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.23	4.10	4.3	4.28

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

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 362 - Construction Law / Austin	Three (3) Non-Cumulative Exams	At least 80% of students earn a C (70%) or better	100%	100%	91%	100%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.23	4.20	4.22	4.07



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18. Understand the basic principles of sustainable construction

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 332 - Building Science I / Day	Series of Questions on Midterm Exam + Final Exam	At least 80% of students earn a C (70%) or better	98%	90%	97%	100%
CstM 333 - Building Science II / Day	Series of Questions on Midterm Exam + Final Exam	At least 80% of students earn a C (70%) or better	97%	97%	98%	98%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.28	4.22	4.39	4.44

19. Understand the basic principles of structural behavior

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
Arch 351 - Structures I / Ibrahim (Adjunct)	Exam #1 + Final Exam	At least 80% of students earn a C (70%) or better	not assessed	not assessed	93%	95%
Arch 463 - Structures III / Ibrahim (Adjunct)	Exam #1	At least 80% of students earn a C (70%) or better	not assessed	98%	93%	95%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	4.02	3.94	4.02	3.95

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

Where assessed/ Who	Assessment item	Performance Criteria	AY 2018/19	AY 2019/20	AY 2020/21	AY 2021/22
CstM 332 - Building Science I / Day	Series of Questions on Midterm Exam + Final Exam	At least 80% of students earn a C (70%) or better	98%	90%	97%	100%
CstM 333 - Building Science II / Day	Series of Questions on Midterm Exam + Final Exam	At least 80% of students earn a C (70%) or better	97%	97%	87%	92%
Exit Survey/ Program Head	Question on how well students feel they can accomplish SLO	Greater than 3.5 on scale of 1 to 5	3.91	4.24	4.22	4.44



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3. Assessment Implementation Plan

Assessment evaluation data was due to the Program Head by the 15th of each month after a semester concludes. The Senior Exit Survey was conducted online via Qualtrics and results were made available by July 15th of same year. The Program Head collated the program assessment data and degree program objectives data into a report for review at both a fall faculty retreat/ meeting, the fall Curriculum Committee (sub-committee of the Construction Management Advisory Board (CMAB), and at a fall CMAB meeting. Recommendations, improvements, corrective actions, and changes will be recorded (or appended as necessary) and reflected in future appendices (Appendix C) to this report.

4. Program Findings & Recommendations

AY 2017/18 was spent in preparation of and completion of our assessment plan but also included a finalization of curriculum mapping and assessment tool + rubric development. AY 2018/19 was our first complete year of collecting data after development of our current assessment plan. The information below outlines our data analysis, observations, and recommendations. We have worked to address 1. Conformance with ACCE assessment guidelines; 2. SLO development and data collection; 3. Performance level accomplishment and/or trends for direct assessment tools/areas; and 4. Performance level accomplishment and/or trends for indirect assessment tools/areas.

The AY 2018/2019 assessment cycle led to the modification of several assessment tools, a reduction of four (4) direct assessment tools, and adjustment to where specific SLO's were assessed. These changes were based upon input from the faculty and further analysis of curriculum in relation to our curriculum mapping. It is believed that the adjustments have proven successful.

The AY 2019/2020 assessment cycle again led to the modification of several assessment tools and an adjustment to where a SLO #15 should be assessed. [However, given the efforts of the instructor and the student results this will be addressed at the fall 2021 assessment meeting/retreat.] These changes were based on input from the faculty. The implemented adjustments have proven successful in this round of assessment. The AY 2020/2021 assessment cycle again led to the modification of several assessment tools and an adjustment to where a SLO #15 should be assessed.

The AY 2021/2022 assessment cycle again led to the modification of several assessment tools and an adjustment to where a SLO #15 should be assessed.

Further information can be found in Appendix C - Observations & Recommendations Report.

Findings: This process has resulted in a high level of buy-in wherein everyone (including faculty from Architecture, Civil Engineering, and Landscape Architecture) is accustomed to the assessment system that we have established. The overall outcome of these efforts has been positive. Faculty have found value in the assessment process and are open to potential changes relative to assessment tools. Many of the concerns regarding the collection of data (data not received) for courses taught by adjunct faculty in Architecture have been assuaged due to the hire of a visiting professor for the 21-22 AY. It is worth noting that permanent faculty require minimal reminders to provide data by the required deadlines each semester and the entire process is becoming more fluid.

In reviewing the data and results, the following observations were made:

- 26 of 27 required SLO direct assessment tools were completed as of May 15.
- 20 of 20 required SLO indirect assessment tools were completed by May 15.



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- All of the direct assessment performance criteria were met except:
 - SLO #11 (surveying) – zero of one tools
- All of the indirect assessment performance criteria were met except:
 - SLO #11 (surveying) – students do not feel they can apply basic surveying for construction layout.

4. CMAB Responses & Recommendations

The outcomes of our assessment efforts including, but not limited to, the Observations & Recommendations Report are presented to the CMAB at a fall meeting for discussion and/or further recommendations. The minutes covering this portion of the meeting have been affixed to Appendix C - Observations & Recommendations Report.

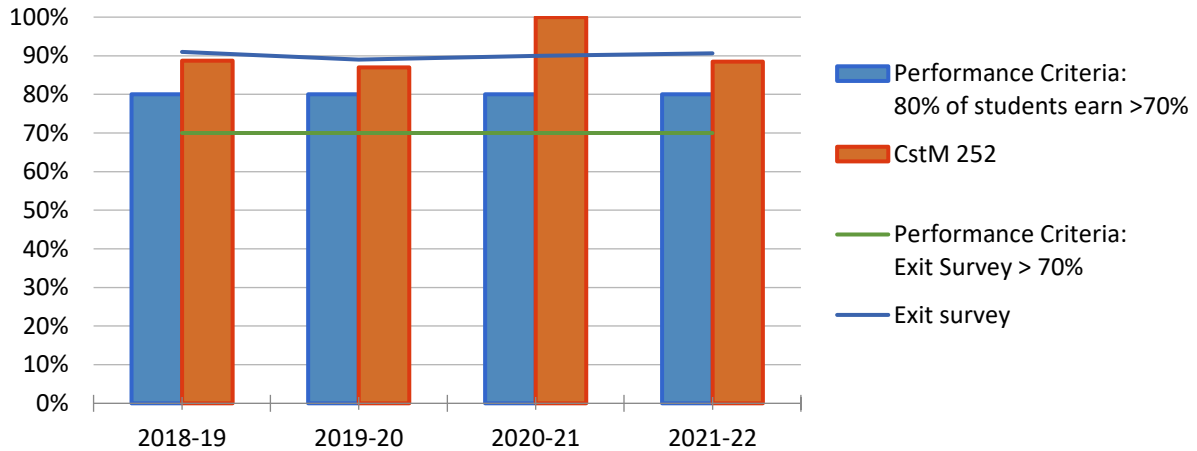


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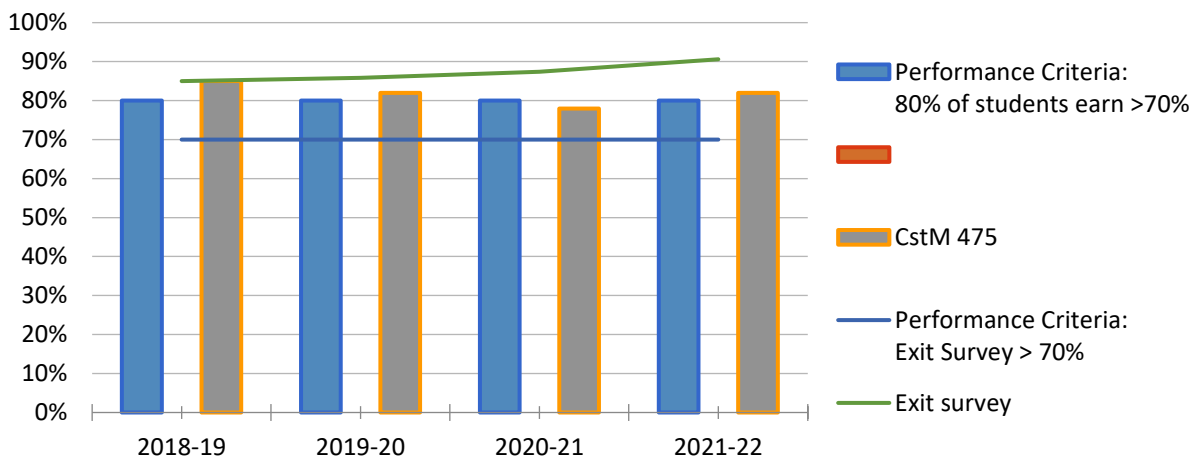
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Appendix A Detailed Direct Assessment Data

SLO #1: Create written communications appropriate to the construction discipline



SLO 2: Create oral presentations appropriate to the construction discipline

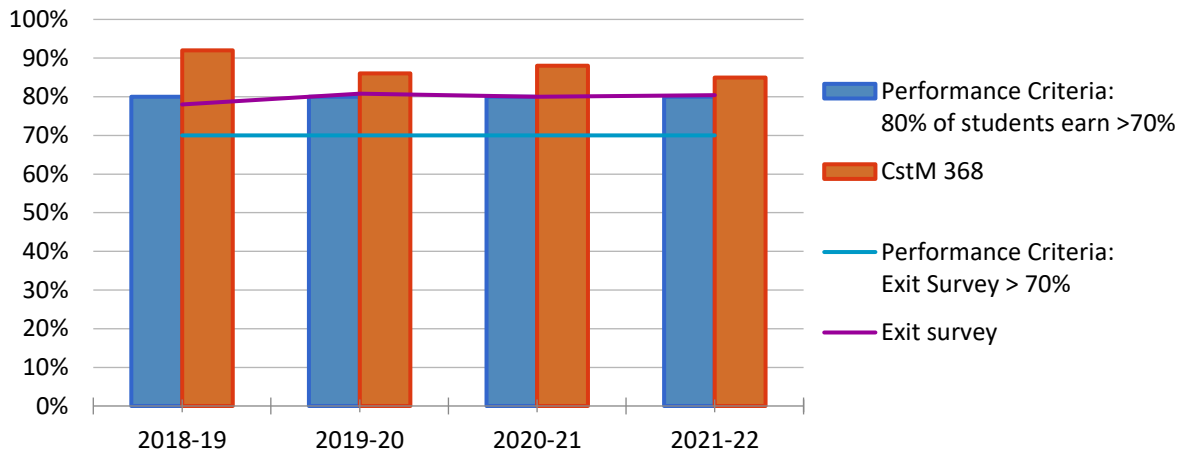




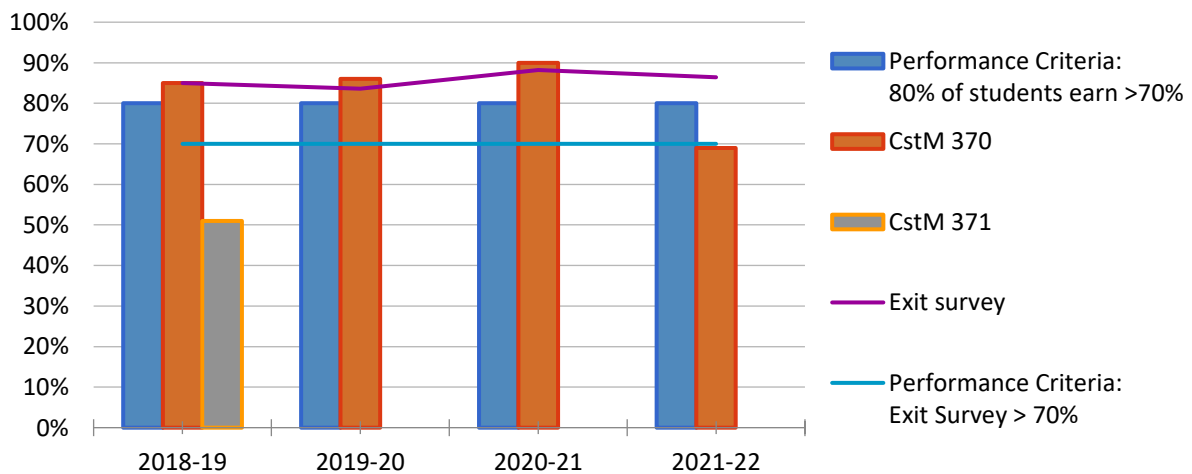
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SLO #3: Create a construction project safety plan



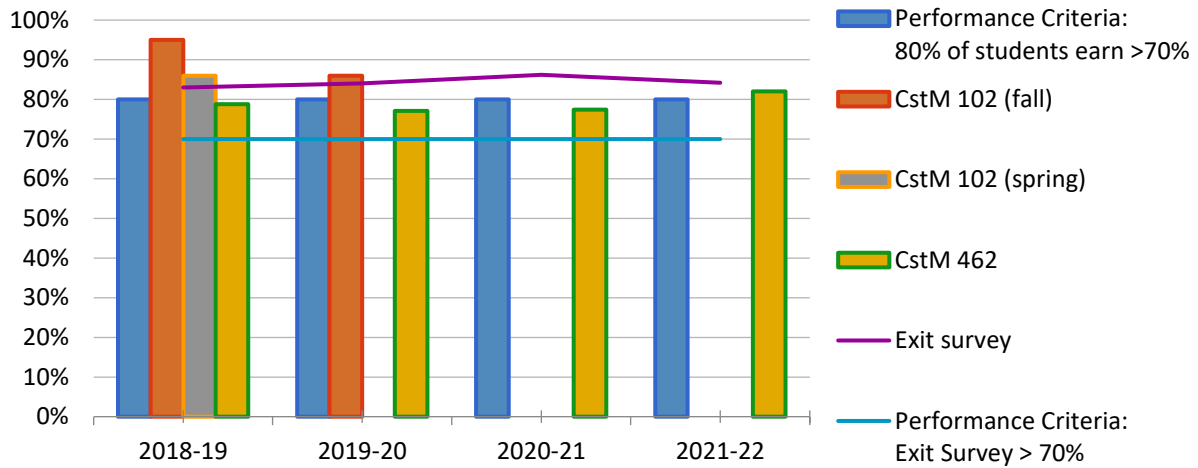
SLO #4: Create construction project cost estimates



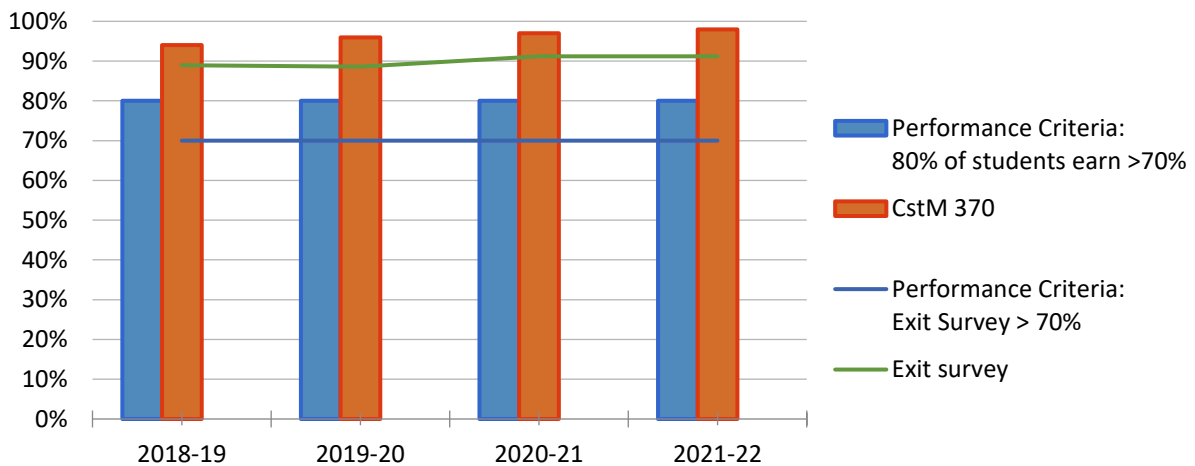


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SLO #5: Create construction project schedules



SLO #6: Analyze professional decisions based on ethical principles

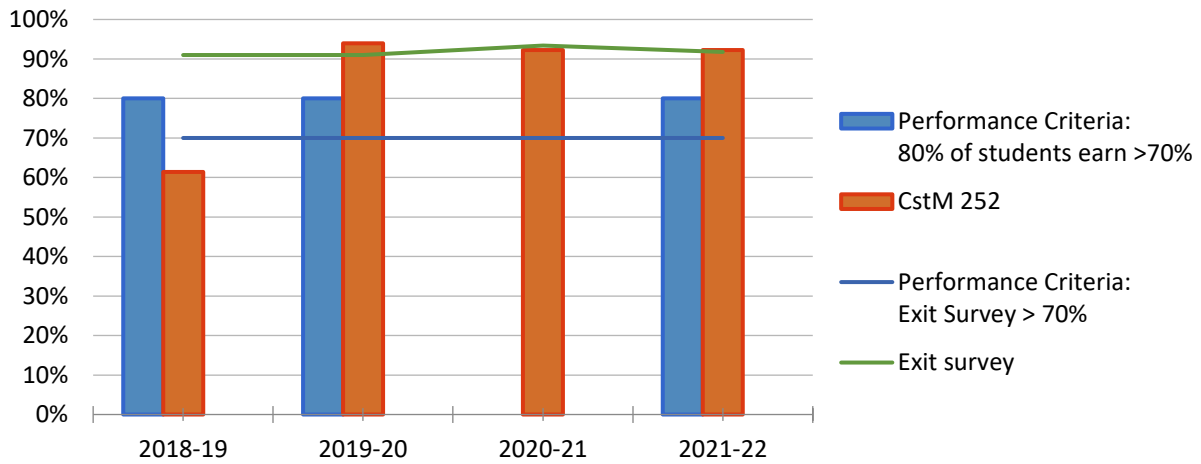




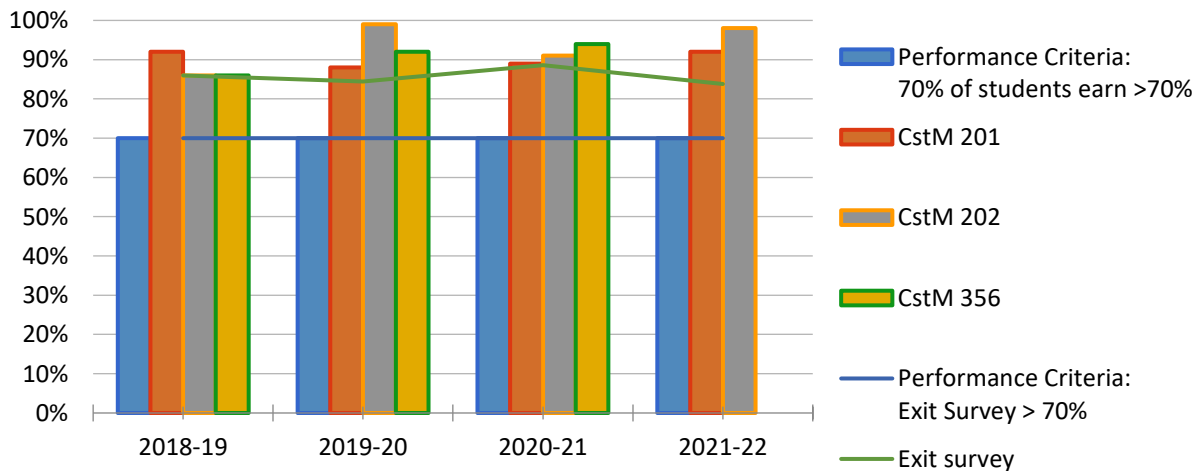
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SLO #7: Analyze construction documents for planning and management of construction process



SLO #8: Analyze methods, materials, and equipment used to construct projects

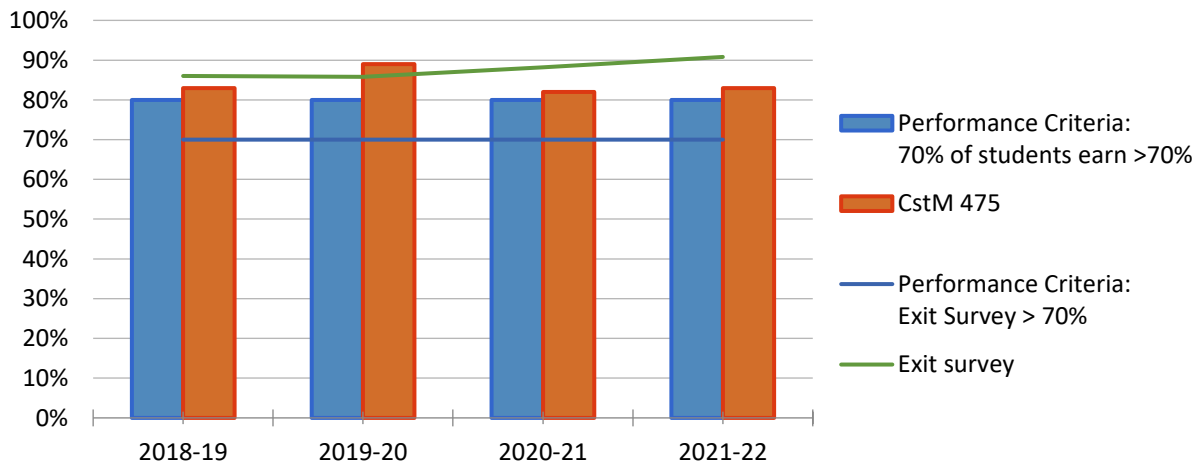




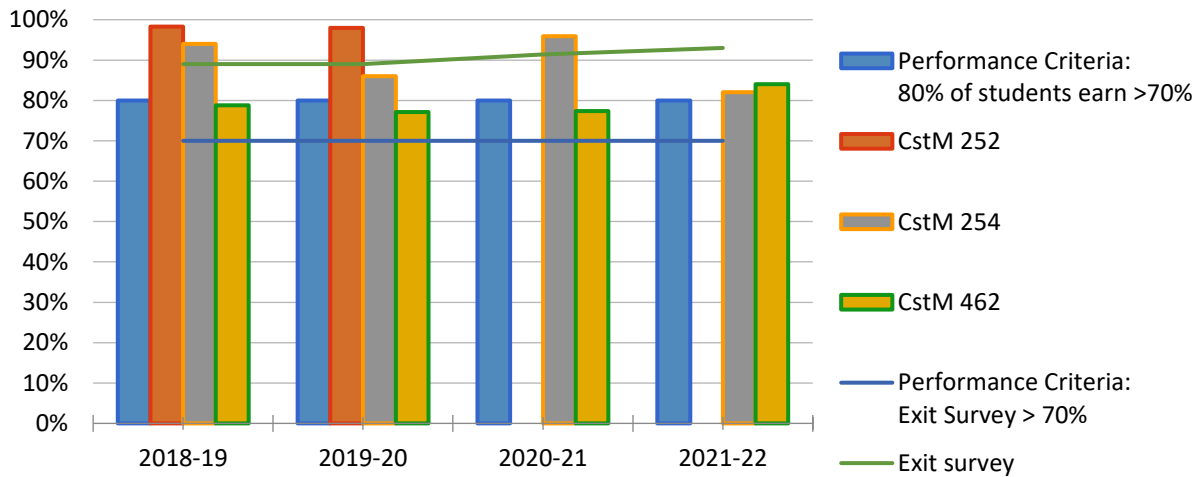
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SLO #9: Understand the role of the construction manager as a member of multi-disciplinary teams

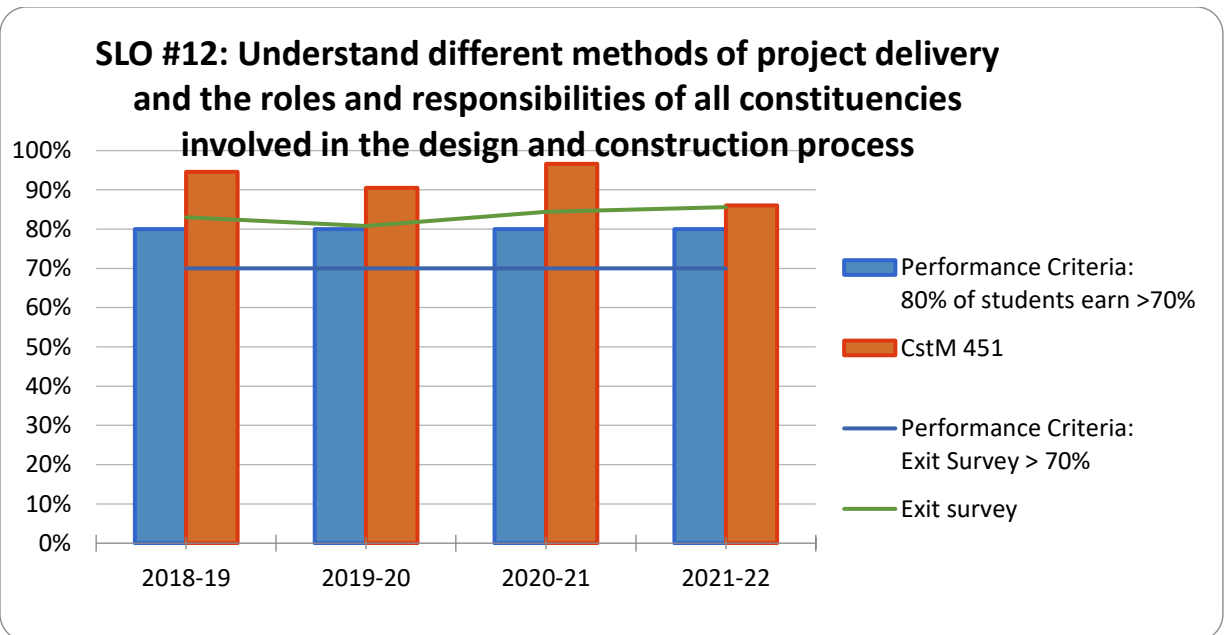
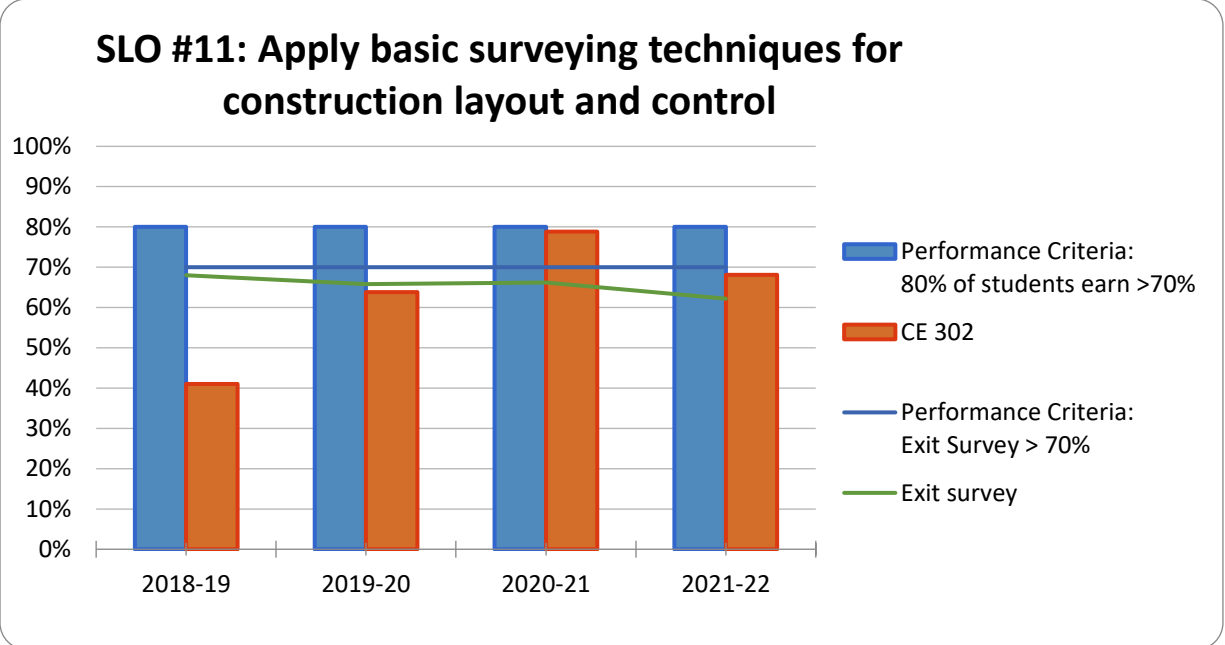


SLO #10: Apply electronic-based technology to manage the construction process





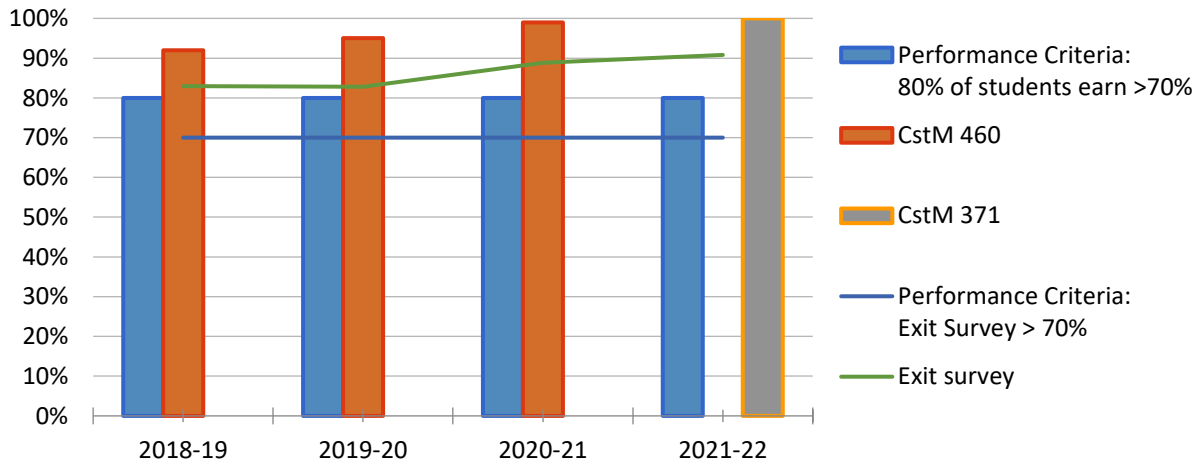
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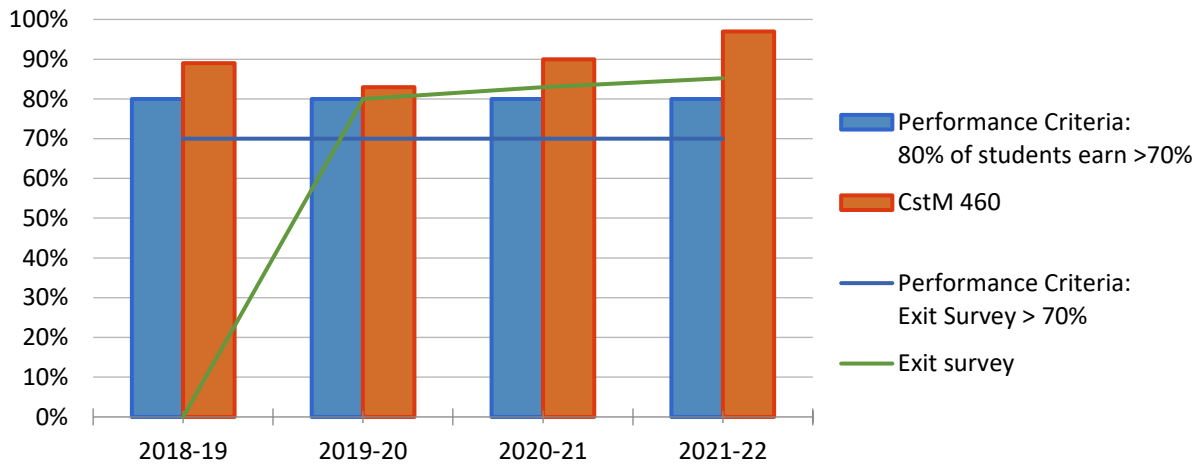


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SLO #13: Understand construction risk management

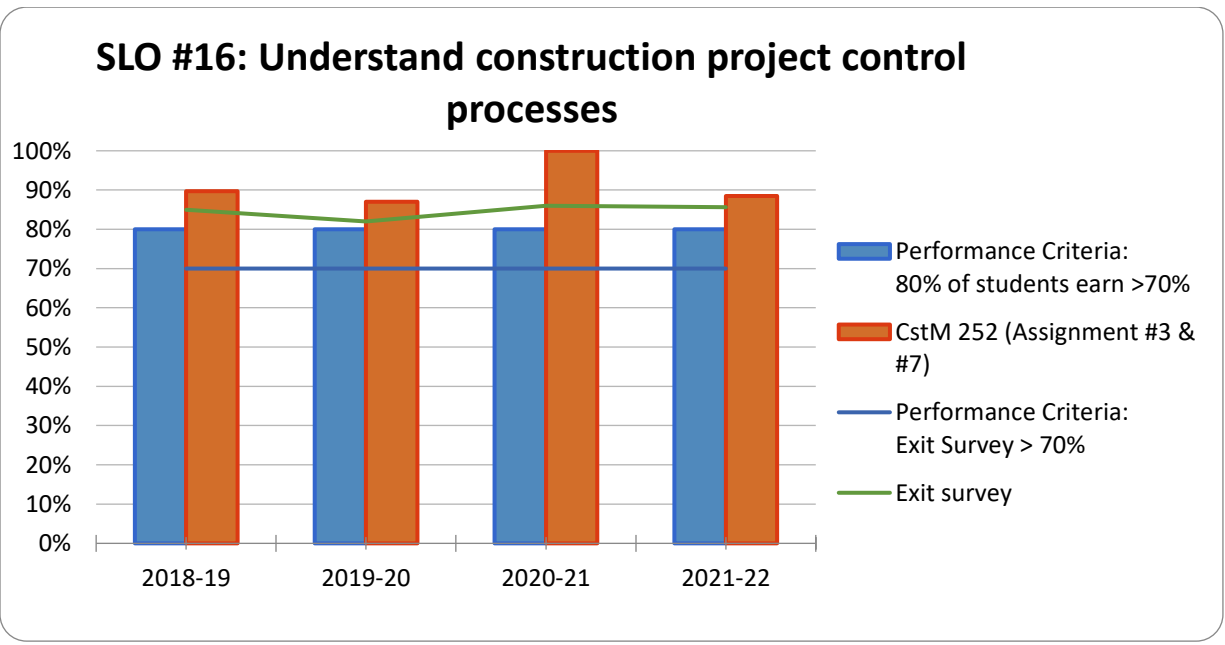
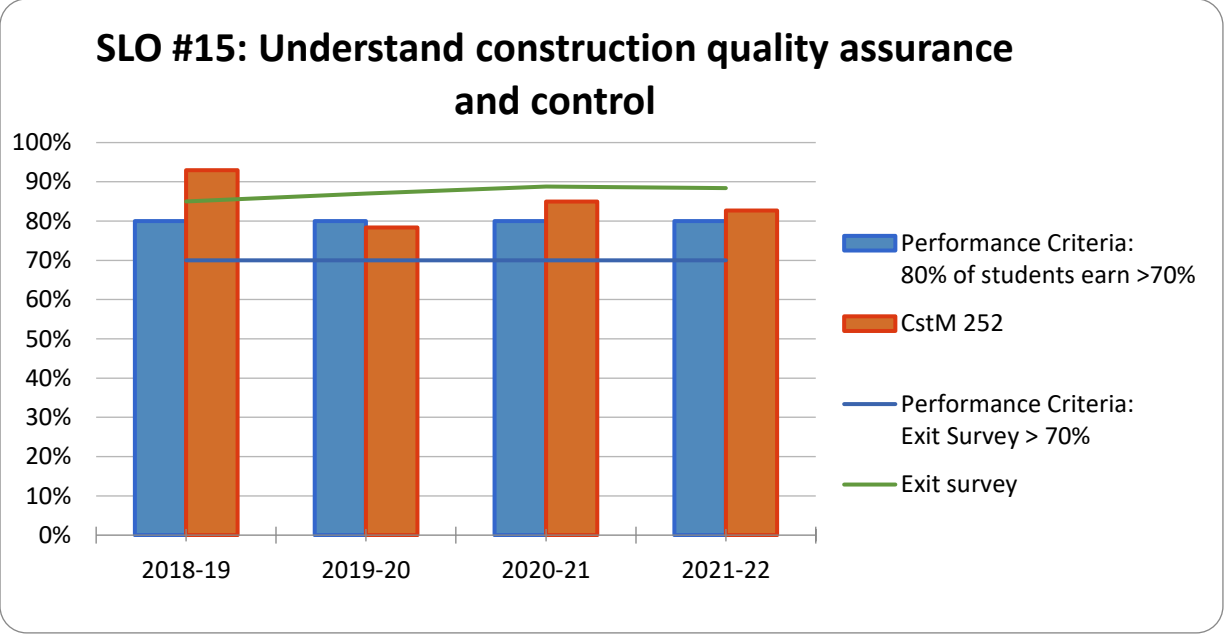


SLO #14: Understand construction accounting and cost control





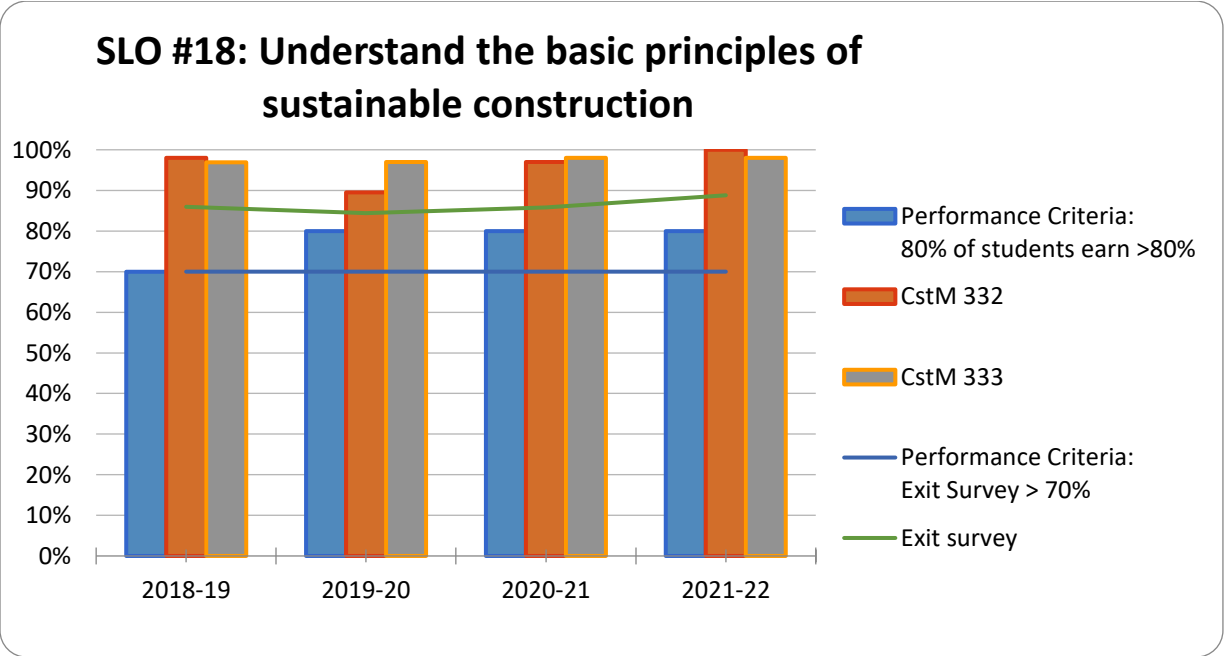
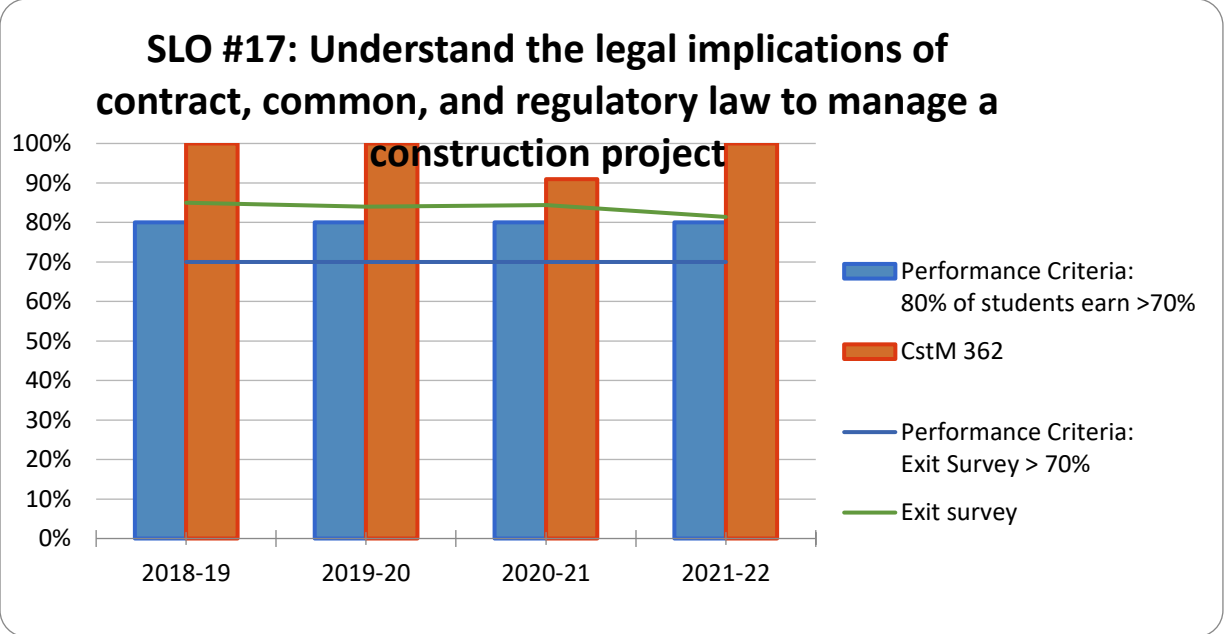
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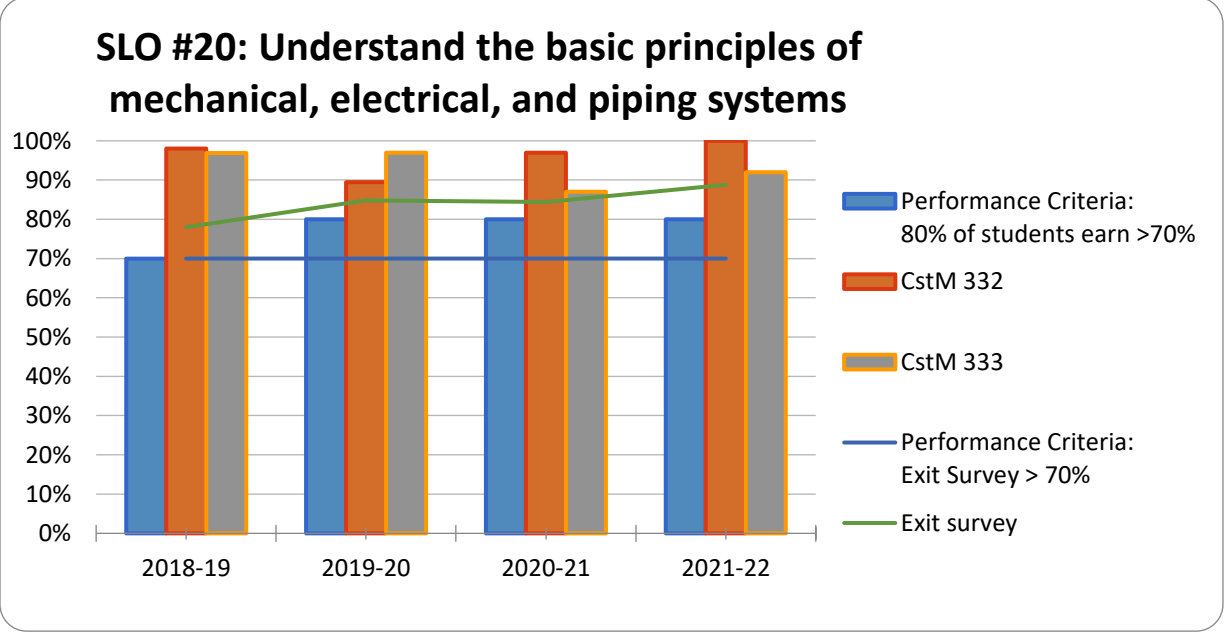
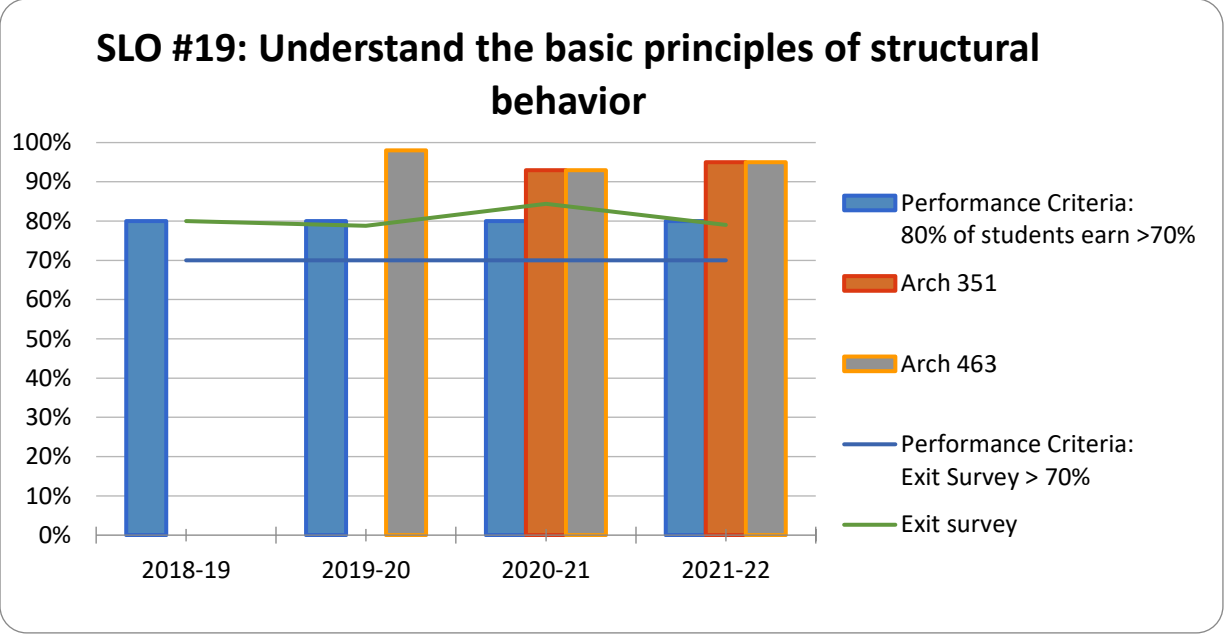
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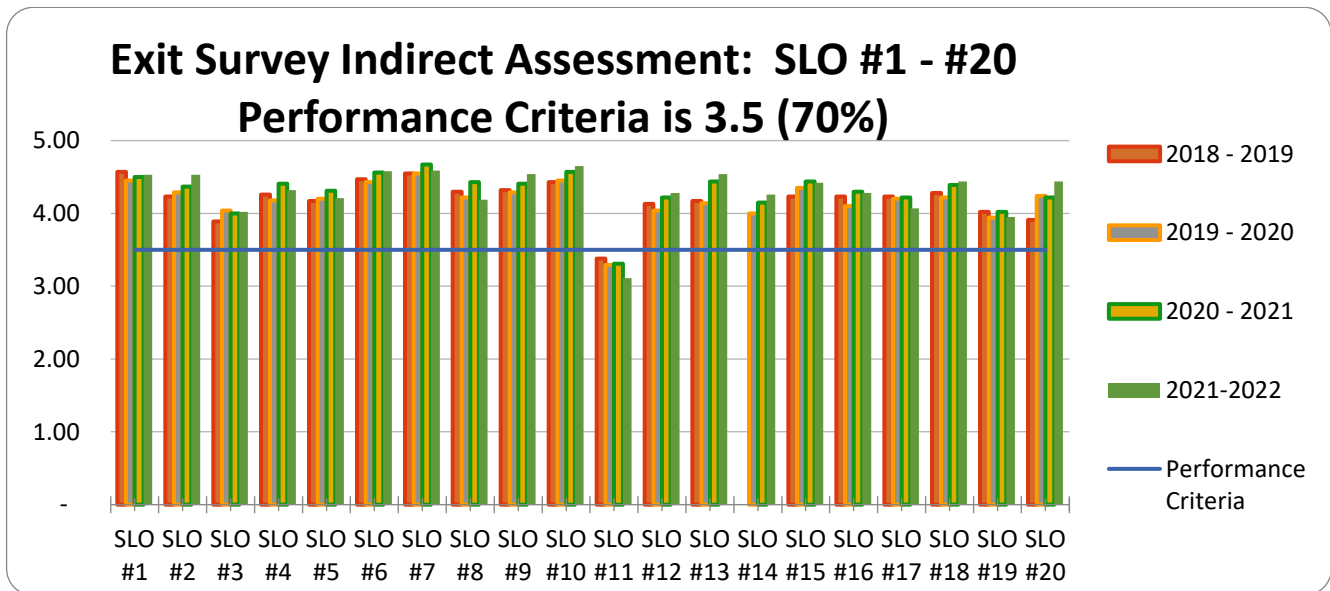




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Appendix B Detailed Indirect Assessment Data Senior Exit Survey

As an indirect assessment tool, this survey is designed to determine graduating senior’s opinion on how well they accomplished the SLO. Below is a historical (and graphical) representation of the Senior Exit Survey results as it relates to the questions used for this Detailed Indirect Assessment Tool.



NOTE: Due to an error on the 2019 Senior Exit Survey, question #14 regarding SLO #14 was not included. This error has been corrected (see below) and data was obtained for the subsequent years.



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The information below identifies the scale and the questions used for this indirect assessment tool.

On a scale of 1 to 5, please rate your level of agreement with each of the 21 statements below as to how well the CM program prepared you with the necessary knowledge and skill. Select the most appropriate rating/number for each statement (with 1 = strongly disagree, 2 = disagree, 3 = mixed feelings, 4 = agree, and 5 = strongly agree):

- 1. I am able to create written communications appropriate to the construction discipline.*
- 2. I am able to create oral presentations appropriate to the construction discipline.*
- 3. I am able to create a construction project safety plan.*
- 4. I am able to accurately estimate and price work to create a construction project estimates.*
- 5. I am able to create a construction project schedule using CPM and computer/software.*
- 6. I am able to analyze professional decisions based on ethical principles.*
- 7. I am able to analyze (read & interpret) construction documents for the planning and management of construction processes.*
- 8. I am able to analyze methods, materials, and equipment used to construct projects.*
- 9. I am able to understand construction management skills as an effective member of a multi-disciplinary team.*
- 10. I am able to apply electronic-based technology to manage the construction process (e.g., Procore, Bluebeam, etc.).*
- 11. I am able to apply basic surveying techniques for construction layout and control.*
- 12. I understand different methods of project delivery and the roles and responsibilities of all constituencies (parties) involved in the design and construction process.*
- 13. I understand construction risk management.*
- 14. I understand construction accounting and cost control.*
- 15. I understand construction quality assurance and control.*
- 16. I understand construction project control processes.*
- 17. I understand the legal implications of contract, common, and regulatory law to manage a construction project.*
- 18. I understand the basic principles of sustainable construction.*
- 19. I understand the basic principles of structural behavior.*
- 20. I understand the basic principles of mechanical, electrical and plumbing systems.*
- 21. The CM program of study was very good preparation for my career.*



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Appendix B.1

Other Senior Exit Survey + Senior Exit Interview Findings

The findings below are a compilation of feedback provided by the seniors via the Senior Exit Survey (SES). Due to the transition to online/remote learning as a result of COVID-19, the program coordinator was unable to meet with the senior class in person (or remotely) to discuss what parts of the CM program they liked and what could be improved. It is anticipated that the program coordinator will be able to facilitate this meeting in the spring 2022 semester. The following is a summarized compilation of feedback from the seniors:



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Appendix C Faculty Observations & Recommendations Report

The CM faculty met on February 7, 2021 and October 25, 2022 for a faculty meeting/retreat focused primarily on observations and recommendations associated with the prior year's (2021-2022 academic year) direct and indirect assessment results. In this meeting, each SLO and their respective assessment tool/item, performance criteria, and student performance was discussed. While this was a lengthy process the result was a robust discussion coupled with an honest reflection of both student and faculty performance. The following summarizes the observations and recommendations for each SLO (via direct assessment):

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

CstM 252 - Construction Administration & Documentation. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

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

CstM 475 - Senior Capstone. The tool(s) used for assessment is and the results are satisfactory. No changes at this time.

SLO #3 - Create a construction project safety plan.

CstM 368 - Safety & Health. The tool(s) used for assessment have been modified to better reflect the assessment of a project safety plan. The results are satisfactory. No other changes at this time.

SLO #4 - Create construction project cost estimates.

CstM 370 - Estimating I. The tool(s) used for assessment are appropriate but the results are not at the desired level. No other changes at this time. Instructor will evaluate assessment tool in relation to the exam duration AND evaluate delivery of content for areas where additional emphasis can/should be provided. Concern with student apathy and/or lack of engagement returning to campus post-COVID which is a common concern in higher-education. We will continue to monitor the student performance.

CstM 371 - Estimating II. This SLO no longer needs to be assessed in this course – 1) prior year assessment did not meet standards and 2) only one (1) direct assessment is needed for each SLO – at the direction of the ACCE Visiting Team (October 2021).

SLO #5 - Create a construction project schedule.

CstM 462 - Planning & Scheduling. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

SLO #6 - Analyze professional decisions based on ethical principles.

CstM 370 - Estimating I. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

CstM 473 - Human Productivity. This SLO will no longer be assessed in this course – previously used assessment tool was not sufficient for “analyze” category – per the direction of the ACCE Visiting Team (October 2021).

SLO #7 - Analyze construction documents for the planning and management of construction processes.



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CstM 252 - Construction Administration & Documentation. The tool(s) used for assessment are appropriate and the results are satisfactory. The exam (lab final) was modified to be a two-part exam resulting in a better assessment of student knowledge. No changes at this time.

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

CstM 201 - Materials I. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time. Changing performance criteria at least 80% earn 70% or better.

CstM 202 - Materials II. The tool(s) used for assessment are appropriate and the results are satisfactory. Changing performance criteria at least 80% earn 70% or better.

CstM 356 - Earthwork & Equipment. The tool(s) used for assessment are appropriate and the results are satisfactory. Changing performance criteria at least 80% earn 70% or better.

SLO #9 - Understand construction management skills as an effective member of a multi-disciplinary team.

CstM 475 - Senior Capstone. The tool(s) used for assessment are appropriate and the results are satisfactory. Additional tools were added relative to meeting evaluations and peer evaluations. SLO will be changed from 'Apply' to 'Understand' in AY 2022/23. AY 2022/23 will change to CSTM 451 Delivery Systems, utilizing the VE Project Team Assignment. Removing the CSTM 475 assessment.

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

CstM 252 - Construction Administration & Documentation. No longer assessed in this course.

CstM 254 - Construction Graphics. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

CstM 462 - Planning & Scheduling. The tool(s) used for assessment are appropriate. The tool(s) used for assessment are appropriate and the results are satisfactory.

SLO #11 - Apply basic surveying techniques for construction layout and control.

CE 302 - Surveying. The tool(s) used for assessment are appropriate and the results are not at the desired level but there is a concern that this may not be truly representative of student performance. Based on previous concerns and conversations, the instructor incorporated at one (1) new assessment tool for the fall 2022 semester - adding a Written Lab Exam with the Field Lab Exam. We will continue to monitor the student performance.

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

CstM 451 - Delivery Systems. The tool(s) used for assessment tools are appropriate and the results are satisfactory. No changes at this time. We will continue to monitor the student performance.

SLO #13 - Understand construction risk management.

CstM 460 - Construction Cost Management. No longer assessed in this course.

CstM 371 - Estimating II. The tool(s) used for assessment are appropriate and the results are satisfactory. This is the first time this SLO has been assessed in this course via this assessment tool. Therefore, we only have one data point. However, after faculty analysis, we will be moving this to CSTM 451 Delivery systems next year to provide a better assessment tool for Construction Project Risk.



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SLO #14 - Understand construction accounting and cost control.

CstM 460 - Construction Cost Management. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

SLO #15 - Understand construction quality assurance and control.

CstM 252 - Construction Administration & Documentation. The tool(s) used for assessment are appropriate. Instructor added additional course content and assessment tools. Discussion this year resulted in a revised approach to this SLO that would add an additional assessment tool in CstM 252.

SLO #16 - Understand construction project control processes.

CstM 252 - Construction Administration & Documentation. The tool(s) used for assessment are appropriate and results are satisfactory. No change needed at this time.

CstM 460 - Construction Cost Management. No longer assessed in this course.

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

CstM 362 - Construction Law. The tool(s) used for assessment are appropriate and results are satisfactory. No additional changes needed at this time. We will continue to monitor this course and results for the next course offering.

SLO #18 - Understand the basic principles of sustainable construction.

CstM 332 - Building Science I. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time. Though not a bad circumstance, the results are high and we will continue to monitor and evaluate the results for this course.

CstM 333 - Building Science II. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time. Assignment #M10 was removed from the assessment. A series of questions on the midterm and final exam covers the assessment.

SLO #19 - Understand the basic principles of structural behavior.

Arch 352 - Structures II. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

Arch 463 - Structures III. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

SLO #20 - Understand the basic principles of mechanical, electrical and plumbing systems.

CstM 332 - Building Science I. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time. Though not a bad circumstance, the results are high and we will continue to monitor and evaluate the results for this course.

CstM 333 - Building Science II. The tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time. Though not a bad circumstance, the results are high and we will continue to monitor and evaluate the results for this course.



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The following summarizes the observations and recommendations for each SLO (via indirect assessment):

The results were shared with the Construction Management Advisory Board (CMAB) Curriculum Committee on December 6, 2022. The following pages include the meeting minutes and summarizes the observations and recommendations from the Construction Management Advisory Board (CMAB) Curriculum Committee:

The Board of Advisors for the Washington State University Construction Management program as assembled from our ranks a group of industry professionals to serve on a curriculum review committee. This committee consists of Todd Williams – Exxel Pacific, Marjorie Chang Fuller – Hoffman Construction, Marc Everson Abbott Steve Sunich – SGS Associates & Corey Anderson – Fisher Construction Group. On December 6, our committee was convened to review the 2021/2022 AQI plan report for the CM program. The boards discussions covered all of the student learning outcomes. The following is a summary of our discussions:

SLO 1 CstM 252 'Create written communication appropriate to the construction discipline'- The performance results remain consistent for this course. There was a bump in last year's success rate which we attribute to the COVID year

SCO 2 CstM 473 'Create oral presentation appropriate to the construction discipline' - Percentages appear to have gone down. This is the capstone class. The virtual model was not a great model. As many of the board members participated in this effort, we agree that an in-person model is better.

SLO 3 CstM 368 'Create a construction safety plan' – In review of the faculty report, it appears that no additional changes have been made. Success outputs remain consistent and student feedback is high.

SLO 4 CstM 370 'Create construction project cost estimates' – Substantial increase in performance which the program feels is due to the online assessment factor. We are curious to see if this changes in the coming year 'in person'

Todd recommended that 'The Guide' be used in lieu of RS Means. Corey & Todd noted that the success percentage has dropped to 69% for this class. This is an Estimating I class and should be easier than the CstM371 course that is no longer evaluated. It is interesting that the student exit survey results in a high rating. The student 'think' they did well, while only 69% are meeting the performance criteria. The board would like further information on this performance decrease.

SLO 5 CstM 462 'Create construction project schedule' – It has been noted that the performance criteria experienced a 5% increase, when past years were very consistent. The faculty report notes that results are satisfactory and no changes are to be made. We are curious what changed to result in a 5% increase in performance.

SLO 6 CstM 473 'Analyze professional decisions based on ethical principles' – No changes are reported by the faculty at this time, and the assessment has resulted in consistent high-performance results. No changes are recommended at this time.



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SLO 7 CstM 252 'Measures the student's ability to analyze construction documents for planning and management of construction processes' - Faculty reports that the exam (lab final) was modified to be a two-part exam resulting in a better assessment of student knowledge. No other changes are to be made at this time. The board committee notes that performance criteria results are consistently good, and feedback from the students is high.

SLO 8 (multiple courses) 'Analyze methods, materials and equipment used to construct projects' - Faculty has changed the performance criteria for 80% of students to get 70% or better for classes CstM 201, 202 & 356
The board is reminded that we have new faculty for this class. It was noted that CstM 356 experienced an 8% drop in performance when previously it was fairly consistent. This class should be further evaluated.

SLO 9 CstM475 - 'Apply Construction management skills as a member of a multidisciplinary team' - This is a difficult SLO to achieve, but the WSU capstone helps us achieve this goal. Despite challenges our results are good in the high 80 percentiles will be changed from 'Apply' to 'understand' in AY 2022/23. AY 22/23 will change to CSTM451 Delivery System, utilizing the VE project Team assignment. Removing the CSTM 475. The board appreciates the clarification on the SLO evaluation and sees no other discussion needed for this class this year.

SLO 10 CstM 254 & CstM 462 - No changes or updates on status of the course have been reported by faculty. Last year it was reported that a new professor was expected in 254 construction graphics. This course did experience a 10% decrease from its previous 3-year average. The board recommends that the new professor be monitored or that the 10% decrease be discussed amongst faculty with the goal of improvement next year

SLO 11 CE 302 'Apply basic surveying techniques for construction layout and control' - Previous year comments "*Substantial improvement has been made due to changes by the instructor in the Civil department. The challenge is that it is a big class, primarily to Civil Engineering students. Changes continue to be made to improve the outcomes for all disciplines. The CAD work continues to be a challenge, but the CM students also have a poor attitude towards any class that does not start with CstM. A suggestion was made to try to address some of the CAD challenges in some of the design classes*"

This year faculty reports:

The tool(s) used for assessment are appropriate and the results are not at the desired level but there is a concern that this may not be truly representative of student performance. Based on previous concerns and conversations, the instructor incorporated one (1) new assessment tool for the fall 2022 semester - adding a Written Lab Exam with the Field Lab Exam. We will continue to monitor the student performance.

Board Discussion includes:

Todd reminded the group that the software that this class requires is that which the Civil students have experience with, but the CM students do not. Todd reports that his son stated that the TA's are



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not helpful and that the equipment does not work consistently. He has been told the instructor is good, but the peripheral support is poor. Corey noted that he does not have an issue with one of the classes being overly difficult, if not un-fair to the CM students. Life is full of challenges and things that are not fair.

Multiple solutions were discussed including some additional training on the software, or other support. Professor Cherf will collect more information for discussion at the 12/9 board meeting.

SLO 12 CstM 451 'Understand different methods of project delivery and the roles and responsibilities of all ...' Faculty reports that outcomes are satisfactory and that no changes are being made at this time. The board notes that this year has dipped below the 90% mark for the first time since tracking began. The board recommends that this drop in performance be monitored.

SLO 13 CstM 371 Estimating II 'Understand construction risk management' – It was noted that this is the first and last year that this course will be evaluated for this SLO. Next year faculty reports that the SLO will move to CstM 451 Delivery systems. This will produce two consecutive years with only one data point. The board recommends staying with one class so multiple years data points can be collected.

SLO 14 CstM 460 'Understand construction accounting and cost control' – Faculty reports that the tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time. The board sees no additional discussion required for this course at this time.

SLO 15 CstM 252 'Understand construction quality assurance and control' – Last year faculty reported that some assessment tools will be re-evaluated. This year discussion this year resulted in a revised approach to this SLO that would add an additional assessment tool in CstM 252.

SLO 16 CstM 252 'Understanding construction project control processes' – No changes or discussion was had. Last year there was concern about the 100% performance result, and that it could be attributed to the COVID year as well. This year's results were more consistent with the past percentages, which we believe proves out last year's theory. No addition action is required by the board.

SLO 17 'Understand the legal implications of contract, common, and regulatory law to manage a construction project'. CSTM 362 on the past, this has been scored at 100%. Last year we only assessed exams which has resulted in a lower scoring. There were too many 'do-overs'. The lower rating at 91% 2020/2021 was a better reflection of how they are doing. This year's return to 100% success rate is further concerning that this course is too easy. It should also be noted that certain board members feel this class is highly important.

SLO 18 CstM 332 & CstM 333 'Understand the basic principles of sustainable construction' - Faculty reports that assignment #M10 was removed from the assessment. A series of questions on the midterm and final exam covers the assessment. The board has not concern over the additional results



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SLO 19 Arch 351 & Arch 463 'Understand the basic principles of structural behavior'- Faculty reports that the tool(s) used for assessment are appropriate and the results are satisfactory. No changes at this time.

The board has not additional questions or comments.

SLO 20 CstM 332 'Understanding the basic principles of mechanical, electrical and piping systems' – Results for this course continue to be high. The faculty reports that they will continue to monitor the course. The board agrees with this course of action.

As reported in the past, this committee seeks to continually advance and better the program. This year we have a new program head in Rick Cherf, and will seek to support him during his transition, including with this course evaluation. Last year the board was given the opportunity to review and make comments to the course syllabus which we did. Although no feedback has been provided on our recommendation, we do not feel the need to review them again this year. In the past this has been conducted on a 3-year basis, which we feel is appropriate.

This committee is very pleased with the continued efforts of the faculty to create and use this measurement tool, and their commitment to improvement of the program, and to allow we the industry to be a part of that improvement. We will look forward to every future opportunity to improve this program and better prepare graduates as our future employees and partners.

Authored by: Corey Anderson - Fisher Construction Group

Endorsed by: Marjorie Chang Fuller - Hoffman Construction

Todd Williams - Exxel Pacific, Inc.

Marc Everson - Abbott Construction

Steve Sunich - SGS Associates