This report highlights the findings of the AY 2018/19 assessment cycle. It serves as the basis for the faculty and the Construction Management Advisory Board (CMAB) review during the fall of 2019. 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 2015-2020” dated May 5 2015.

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 2018 @ 58**
- Placement rate of graduates should be above 95%: **Spring 2019 @ 91% and Summer 2019 @ 100%**
- Accreditation by American Council for Construction Education (ACCE) is maintained: **Yes, 3-year report**
- Provide experiential learning opportunities for students: **Internship rates @ 90% for 3rd year and 85% for 2nd year students**

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 programs performance criteria. Individual assessment tools for specific SLO’s are found in their respective notebooks/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.
2.4 Assessment Tools for Student Learning Outcomes 2018/19

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)

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<tr>
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<th>Course Title</th>
<th>Writing</th>
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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.
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.
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**

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<tbody>
<tr>
<td>CstM 252 - Construction Administration &amp; Documentation / Gunderson</td>
<td>Individual Course Assignment #2 &amp; #5</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>86%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
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2. **Create oral presentations appropriate to the construction discipline**

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<tr>
<td>CstM 473 - Human Productivity in Construction / Adjunct (Sunleaf)</td>
<td>Oral Negotiations Assignment</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>not assessed</td>
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<tr>
<td>CstM 475 - Senior Capstone / Cherf</td>
<td>Final Team Presentations – each student individually evaluated</td>
<td>At least 80% of students earn a C (70%) or better</td>
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3. **Create a construction project safety plan**

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<tr>
<td>CstM 368 - Safety &amp; Health / Cherf</td>
<td>Jobsite Safety Hazard Analysis plan for a specific project.</td>
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4. Create construction project cost estimates

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<td>Final Exam - complete</td>
<td>At least 80% of students earn a C (70%) or better</td>
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5. Create construction project schedules

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<td>CstM 102 - Intro to the Built Environment / Cherf</td>
<td>Individual Assignment #1 Test #2</td>
<td>At least 80% of students earn a C (70%) or better</td>
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<td>CstM 462 - Planning &amp; Scheduling / Gunderson</td>
<td>Individual Scheduling Projects B, C, and D</td>
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6. Analyze professional decisions based on ethical principles

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

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<td>At least 80% of students earn a C (70%) or better</td>
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8. Analyze methods, materials, and equipment used to construct projects

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<tr>
<td>CstM 201 - Materials I / Kirk</td>
<td>Series of Questions on Quizzes + Homework + Final Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>92%</td>
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<tr>
<td>CstM 202 - Materials I / Adjunct (Lima)</td>
<td>Series of Questions on Quizzes + Homework + Final Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>86%</td>
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<tr>
<td>CstM 356 - Earthwork &amp; Equipment / Kirk</td>
<td>Series of Questions on Quizzes + Homework + Final Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>86%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>4.3</td>
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9. Apply construction management skills as a member of a multidisciplinary team

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<tr>
<td>CstM 475 - Senior Capstone / Cherf</td>
<td>Industry judges evaluation of students during the Capstone Competition.</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>83%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>4.32</td>
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10. Apply electronic-based technology to manage the construction process

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<tr>
<td>CstM 252 - Construction Administration &amp; Documentation / Gunderson</td>
<td>Individual Assignment #2, #5, and #6</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>98%</td>
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<tr>
<td>CstM 254 - Construction Graphics / Anderson</td>
<td>Midterm Exam (Lab), Final Project (Lab), and Homework Assignment – Bluebeam Revu</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>94%</td>
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<tr>
<td>CstM 462 - Planning &amp; Scheduling / Gunderson</td>
<td>Individual Scheduling Projects B, C, and D</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>79%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>4.43</td>
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11. Apply basic surveying techniques for construction layout and control

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<tr>
<td>CE 302 - Introduction to Surveying / Olsen</td>
<td>Lab Exam – Exercises 1-3</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>41%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>3.38</td>
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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

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<tr>
<td>CstM 451 - Delivery Systems / Gunderson</td>
<td>Individual Course Assignment #3 + Series of Questions on Quiz #’s 1-4 &amp; Exam #’s 1 and 2</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>95%</td>
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<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>4.13</td>
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### 13. Understand construction risk management

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<tr>
<td>CstM 460 - Construction Cost Management / Cherf</td>
<td>Root Cause Analysis Assignment</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>92%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
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### 14. Understand construction accounting and cost control

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<tr>
<td>CstM 460 - Construction Cost Management / Cherf</td>
<td>Series of Questions on Mid-Term Exam</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>89%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>not assessed</td>
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### 15. Understand construction quality assurance and control

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<tr>
<td>CstM 252 - Construction Administration &amp; Documentation / Gunderson</td>
<td>Series of Questions on Exam #2</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>93%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>4.23</td>
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16. Understand construction project control processes

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<tr>
<td>CstM 252 - Construction Administration &amp; Documentation / Gunderson</td>
<td>Assignment #5</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>90%</td>
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<tr>
<td>CstM 460 - Construction Cost Management / Cherf</td>
<td>Series of Questions on In-Class Exam</td>
<td>At least 80% of students earn a C (70%) or better</td>
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<td>94%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
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17. Understand the legal implications of contract, common, and regulatory law to manage a construction project

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<td>CstM 362 - Construction Law / Austin</td>
<td>Three Non-Cumulative Exams and Two Writing Assignments</td>
<td>At least 80% of students earn a C (70%) or better</td>
<td>100%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
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18. Understand the basic principles of sustainable construction

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<tr>
<td>CstM 332 - Building Science I / Day</td>
<td>Series of Questions on Quiz #’s 8 and #9 + Assignment #6</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td></td>
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<td>98%</td>
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<tr>
<td>CstM 333 - Building Science II / Day</td>
<td>Series of Questions on Midterm Exam + Series of Questions on Final Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td></td>
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<td>97%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
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<td>4.28</td>
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19. Understand the basic principles of structural behavior

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<tr>
<td>Arch 352 - Structures II / Adjunct</td>
<td>Series of Questions on Midterm Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>not assessed</td>
<td>not assessed</td>
<td>not assessed</td>
<td>not assessed</td>
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<tr>
<td>Arch 463 - Structures III / Adjunct</td>
<td>Series of Questions on Midterm Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>not assessed</td>
<td>not assessed</td>
<td>not assessed</td>
<td>not assessed</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>4.02</td>
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20. Understand the basic principles of mechanical, electrical and piping systems

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<tr>
<td>CstM 332 - Building Science I / Day</td>
<td>Series of Questions on Quiz #’s 1-7 and 8-10 + Assignment #’s 2-8 and 10 + Series of Questions on Final Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>98%</td>
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<tr>
<td>CstM 333 - Building Science II / Day</td>
<td>Series of Questions on Midterm Exam + Series of Questions on Final Exam</td>
<td>At least 70% of students earn a C (70%) or better</td>
<td>97%</td>
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<tr>
<td>Exit Survey/ Program Head</td>
<td>Question on how well students feel they can accomplish SLO</td>
<td>Greater than 3.5 on scale of 1 to 5</td>
<td>3.91</td>
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3. Assessment Implementation Plan

Assessment evaluation data was due to the program coordinator by the 15th of each month after a semester. The senior exit survey was conducted online via Qualtrics and results were made available by July 15th of same year. The program coordinator collated the program assessment data and degree program objectives data into a report for review at both a fall faculty retreat/meeting and the fall Construction Management Advisory Board (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; and 3. Performance level accomplishment and/or trends for direct and indirect assessment tools/areas. Further information can be found in Appendix C - Observations & Recommendations Report.

Findings: This process has been challenging to incorporate into an already busy workload of the CM faculty plus faculty from Architecture and Civil Engineering. We have had numerous meetings to develop a path forward which have generated engagement with the process and resulted in a good level of buy-in. It seems that everyone is growing accustomed to the assessment system that we have established. Considering the fact that this is our first complete cycle, the outcome has been generally positive and faculty have learned that changes could be made in a variety of courses relative to assessment tools. Although we have had some challenges in collecting data (data not received) for courses taught by adjunct faculty in CM and Architecture it appears that we are still following the ACCE guidelines. It is worth noting that permanent faculty require several reminders to input data by the required deadlines each semester. Moving forward it is anticipated that this entire process should become more fluid.

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

- 25 of 31 required SLO direct assessment tools were completed as of May 15. All but four (4) tools were completed by June 15. As mentioned prior this was due to challenges associated with adjunct faculty teaching several courses in the 2018/19 AY.
- 20 of 20 required SLO indirect assessment tools were completed by May 15.
- All of the direct assessment performance criteria were met except:
  - SLO #4 (estimate) – one of two tools
  - SLO #5 (schedule) – one of three tools
  - SLO #7 (documents) – one of one tool
  - SLO #10 (technology) – one of three tools
  - 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.
  - SLO #14 (accounting) – this is due to an error within the SES and will be remedied for the 2019/20 AY.
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.
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

NOTE: Due to coordination issues with an adjunct faculty member for this course, SLO #2 was not assessed in CstM 473. A permanent faculty member will be teaching the course in the 2019-2020 academic year and assessment data will be obtained.
SLO #3: Create a construction project safety plan

- Performance Criteria: 80% of students earn >70%
- CstM 368
- Exit Survey > 70%

SLO #4: Create construction project cost estimates

- Performance Criteria: 80% of students earn >70%
- CstM 370
- CstM 371
- Exit survey
- Exit Survey > 70%
SLO #5: Create construction project schedules

Performance Criteria:
80% of students earn >70%

CstM 102 (fall)
CstM 102 (spring)
CstM 462
Exit survey

SLO #6: Analyze professional decisions based on ethical principles

Performance Criteria:
80% of students earn >70%

CstM 370
Exit survey
SLO #7: Analyze construction documents for planning and management of construction process

Performance Criteria:
- 80% of students earn >70%
- CstM 252
- Exit Survey > 70%
- Exit survey

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

Performance Criteria:
- 70% of students earn >70%
- CstM 201
- CstM 202
- CstM 356
- Exit Survey > 70%
- Exit survey
SLO #9: Apply construction management skills as a member of a multidisciplinary team

Performance Criteria:
- 70% of students earn >70%
- CstM 475

Exit Survey > 70%

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

Performance Criteria:
- 80% of students earn >70%
- CstM 252
- CstM 254
- CstM 462

Exit Survey > 70%
SLO #11: Apply basic surveying techniques for construction layout and control

Performance Criteria:
- 80% of students earn >70%
- CE 302
- Exit Survey > 70%

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

Performance Criteria:
- 80% of students earn >70%
- CstM 451
- Exit Survey > 70%
SLO #13: Understand construction risk management

Performance Criteria:
- 80% of students earn >70%
- CstM 460

SLO #14: Understand construction accounting and cost control

Performance Criteria:
- 80% of students earn >70%
- CstM 460
SLO #15: Understand construction quality assurance and control

Performance Criteria:
80% of students earn >70%
CstM 252 (Exam + Submittal)
Exit Survey > 70%
Exit survey

SLO #16: Understand construction project control processes

Performance Criteria:
80% of students earn >70%
CstM 252 (Assignment #5)
Exit Survey > 70%
Exit survey
SLO #17: Understand the legal implications of contract, common, and regulatory law to manage a construction project

- Performance Criteria: 80% of students earn >70%
- CstM 362

SLO #18: Understand the basic principles of sustainable construction

- Performance Criteria: 70% of students earn >70%
- CstM 332
- CstM 333
NOTE: Due to coordination issues with an adjunct faculty member for this course, SLO #18 was not assessed in Arch 352 & Arch 463. A permanent faculty member will be teaching the course in the 2019 - 2020 academic year and assessment data will be obtained.
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 will be obtained for the 2019 - 2020 academic year.
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. The CM program of study was very good preparation for my career.
2. I am able to create written communications appropriate to the construction discipline.
3. I am able to create oral presentations appropriate to the construction discipline.
4. I am able to create a construction project safety plan.
5. I am able to accurately estimate and price work to create a construction project estimates.
6. I am able to create a construction project schedule using CPM and computer/software.
7. I am able to analyze professional decisions based on ethical principles.
8. I am able to analyze (read & interpret) construction documents for the planning and management of construction processes.
9. I am able to analyze methods, materials, and equipment used to construct projects.
10. I am able to apply construction management skills as an effective member of a multi-disciplinary team.
11. I am able to apply electronic-based technology to manage the construction process (e.g., Procore, Bluebeam, etc.).
12. I am able to apply basic surveying techniques for construction layout and control.
13. I understand different methods of project delivery and the roles and responsibilities of all constituencies (parties) involved in the design and construction process.
15. I understand construction accounting and cost control.
16. I understand construction quality assurance and control.
17. I understand construction project control processes.
18. I understand the legal implications of contract, common, and regulatory law to manage a construction project.
19. I understand the basic principles of sustainable construction.
20. I understand the basic principles of structural behavior.
21. I understand the basic principles of mechanical, electrical and plumbing systems.
Appendix B.1
Other Senior Exit Survey + Senior Exit Interview Findings

In addition to the Senior Exit Survey (SES), the program coordinator met with the senior class on April 15th to discuss what parts of the CM program they liked and what could be improved. Similar questions are asked in the SES, however, this allowed students an opportunity to have a candid conversation about the program. The following is a summarized compilation of feedback from the seniors:

WSU CM students are generally pleased with the courses and instruction offered and as would be expected, the students provided feedback and suggestions for improvement for future students.

1. Changes to Human Factors
   a. T/TH class in lieu of M/W/F...longer class time would allow for more/better discussions.
   b. Prefer “real world”, applied, problem solving type content (case studies) to readings, etc.
   c. Incorporate superintendent focus here?

2. Capstone
   a. Like the class, intent, and concept
   b. Better coordination between Arch & CM - drawings, requirements, etc.
   c. Same RFP & requirements for both
   d. Could be entire senior year
   e. Concerns with architecture students
      i. Weekly drawing requirements needed
      ii. Lack of response/communication
      iii. More deliverables
      iv. Should start work sooner...fall semester?
      v. They need to know CM expectations/requirements

3. Miscellaneous items
   a. More help with presentations skills + more frequent presentations within 3rd & 4th year courses
   b. Desire for more engagement/application within courses...learn more via project based learning
   c. More field trips...coordinated with classes if possible
   d. Tie info sessions to guest lectures, etc. to increase attendance
   e. More work with Revit...forget a lot from 2nd year + more BIM (Assemble, etc.)
   f. BIM class should be required
   g. Focus on other market sectors (other than buildings) within courses
   h. More focus/information on systems & selections in the MEP course
   i. Emphasized importance of student competitions
   j. Internships...should get course credit – required or elective
   k. Mentee/mentor program...more interaction amongst all students desired
Appendix C
Faculty Observations & Recommendations Report

The CM faculty met on August 13, 2019 for a faculty meeting/retreat focused primarily on observations and recommendations associated with the prior year’s (2018-2019 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. Tool(s) used for assessment is appropriate however, student performance @ 86% is likely higher than realistic. Instructor noted that grading is not tough enough due to time constraints and insufficient TA support in order to provide proper feedback in a timely manner. It was suggested that we explore hiring a grad student from English (or similar) to perform the grading. It was also suggested that we assess this SLO in another course later in the curriculum to ensure the students ability to write appropriately.

**SLO #2 - Create oral presentations appropriate to the construction discipline.**
CstM 473 – Human Productivity in Construction. This SLO was not assessed due to coordination issues with an adjunct faculty member. Further discussion bore out that this course is not a good fit for evaluating this SLO.
CstM 475 – Senior Capstone. The tool(s) used for assessment is appropriate and the results are satisfactory. No changes at this time.

**SLO #3 - Create a construction project safety plan.**
CstM 368 – Safety & Health. Some of the tools used for assessment are appropriate – Job Hazard Analysis assignment to be renamed to project safety plan to remove confusion, Root Cause Analysis assignment to be omitted, and OSHA certification exam to be omitted. 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 however, the grading rubric needs to be revised to better reflect student ability to create an estimate.
CstM 371 – Estimating II. The tool(s) used for assessment are not appropriate – the exam was found to be too lengthy thereby not allowing the students enough time to complete the work. The exam will be modified for the next course offering.

**SLO #5 - Create a construction project schedule.**
CstM 102 – Introduction to the Built Environment. The tools used for assessment are not appropriate – too elementary and too much information provided to serve as more than an introduction. Therefore, this course will not be used for evaluating this SLO in the future.
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, however, the rigor of the assignment is of concern. Further discussion bore out that this course is not a good fit for evaluation this SLO. It was determined that this SLO will be assessed in CstM 473 – Human Productivity in Construction.

SLO #7 - Analyze construction documents for the planning and management of construction processes.
CstM 252 – Construction Administration & Documentation. The tool(s) used for assessment are appropriate however, the exam (lab final) was found to be too lengthy thereby not allowing the students enough time to complete the work. The exam (lab final) will be modified to be a two-part exam for the next course offering.

SLO #8 - Analyze methods, materials, and equipment used to construct projects.
CstM 201 – Materials I. Results are satisfactory and no change needed at this time. However, a new faculty member will be teaching this course due to retirement and assessment tools may change. We will monitor this course and results for the next course offering.
CstM 202 – Materials II. Results are satisfactory and no change needed at this time. However, a new faculty member will be teaching this course due to retirement and assessment tools may change. We will monitor this course and results for the next course offering.
CstM 356 – Earthwork & Equipment. Results are satisfactory and no change needed at this time. However, a new faculty member will be teaching this course due to retirement and assessment tools may change. We will monitor this course and results for the next course offering.

SLO #9 - Apply construction management skills as an effective member of a multi-disciplinary team.
CstM 475 – Senior Capstone. The tool(s) used for assessment are appropriate but additional tools will be added relative to meeting evaluations and peer evaluations. Results are satisfactory.

SLO #10 - Apply electronic-based technology to manage the construction process.
CstM 252 – Construction Administration & Documentation. The tool(s) used for assessment are of concern as they are basically “pass/fail” in nature. Further discussion bore out that this course is not a good fit for evaluation this SLO. It was determined that this SLO will no longer be assessed in this course.
CstM 254 – Construction Graphics. The tool(s) used for assessment are appropriate but an additional tool will be added. Results are satisfactory.
CstM 462 – Planning & Scheduling. Results are satisfactory and no change needed at this time.

SLO #11 - Apply basic surveying techniques for construction layout and control.
CE 302 – Surveying. Results are concerning and assessment tool(s) may not be appropriate considering the number of group/team assignments which is a result of the large class size. Instructor is incorporating at least one (1) new assessment tool for the next course offering. 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 are appropriate and the results are satisfactory. However, the course is being “revamped” to omit DBIA core curriculum resulting in the possibility of modified assessment tools.

SLO #13 - Understand construction risk management.

CstM 460 – Construction Cost Management. Results are satisfactory and no change needed at this time. However, a new faculty member will be teaching this course due to retirement and assessment tools may change. We will monitor this course and results for the next course offering.

SLO #14 - Understand construction accounting and cost control.

CstM 460 – Construction Cost Management. Results are satisfactory and no change needed at this time. However, a new faculty member will be teaching this course due to retirement and assessment tools may change. We will monitor this course and results for the next course offering.

SLO #15 - Understand construction quality assurance and control.

CstM 252 – Construction Administration & Documentation. The tool(s) used for assessment are of concern as it is a single question. Instructor will add additional course content and assessment tools for the next course offering.

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. Results are satisfactory and no change needed at this time. However, a new faculty member will be teaching this course due to retirement and assessment tools may change. We will monitor this course and results for the next course offering.

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 however, the results (100%) are of concern. However, with only one (1) data point) there is no justification to make any changes at this time. We will 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. However, the performance criteria will be changed to 80% of students earn a C or better in lieu of the current 70%.

CstM 333 – Building Science II. The tool(s) used for assessment are appropriate and the results are satisfactory. However, the performance criteria will be changed to 80% of students earn a C or better in lieu of the current 70%.

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

Arch 352 – Structures II. This SLO was not assessed due to coordination issues with an adjunct faculty member. A new, semi-permanent faculty member has been hired to teach this course and it will be assessed in the 2019-2020 academic year.
Arch 463 – Structures III. This SLO was not assessed due to coordination issues with an adjunct faculty member. A new, semi-permanent faculty member has been hired to teach this course and it will be assessed in the 2019-2020 academic year.

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. However, the performance criteria will be changed to 80% of students earn a C or better in lieu of the current 70%. Additionally, the assessment tools will be limited to the mid-term exam and final exam.
CstM 333 – Building Science II. The tool(s) used for assessment are appropriate and the results are satisfactory. However, the performance criteria will be changed to 80% of students earn a C or better in lieu of the current 70%. Additionally, the assessment tools will be limited to the mid-term exam and final exam.

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

The sentiment amongst the faculty relative to the indirect assessment results (via Senior Exit Survey) was generally positive. However, it was noted that the student’s perception of their abilities and or comprehension of concepts was not in line with the direct assessment results. While this is not necessarily surprising, we will monitor this in the next academic year.

The following summarizes the observations and recommendations from the Construction Management Advisory Board (CMAB) Curriculum Committee:

The CMAB Curriculum Committee and the CMAB are committed to the CM program and the curriculum offered to the students. The curriculum was recently reviewed for content relative to topics, etc. and found to be appropriate for the construction industry – providing the students with a robust education and preparing them for the industry.

In regards to the assessment efforts and outcomes, the CMAB Curriculum Committee is generally pleased with the results. It is understood that this is the first complete cycle of assessment and there is a learning curve for the faculty as it relates to the development of assignments/assessment tools. It is noted that not all of the courses met the desired performance criteria but observations/presumptions were made by the faculty that will lead to necessary modifications in some instances. Where there is uncertainty relative to not meeting performance criteria, modifications are not being made as the faculty are waiting for additional data points to determine if there is a trend.

The committee is confident that necessary adjustments will be made and the outcomes relative to performance criteria will be representative of faculty adjustments and student efforts. Further, the efforts by the faculty to adopt and embrace this continuous improvement model of assessment is greatly appreciated.

The following pages include the meeting minutes and summarizes the observations and recommendations from the Construction Management Advisory Board (CMAB) Curriculum Committee:
Information Items:
Meeting held via conference call

Members Present: Marc Everson, Todd Williams, Dave Harrison, and Corey Anderson + Jason Peschel.

Members Absent: Marjorie Chang Fuller

Discussion Items:
1. Welcome & overview

2. Q&A regarding CM assessment efforts/outcomes (summarized below):
   a. How does this work in relation to other courses (taught outside of CM) such as structures and
      surveying?
      1. It requires the CM program head to coordinate, communicate, and collaborate with the
         faculty outside of CM. A series of independent meetings were held to explain the
         reasoning behind implementing this assessment approach, the requirements associated
         with outcomes and assessment tools, and to attain buy-in from the faculty. Fortunately, these faculty have a background teaching in engineering so they are
         familiar with this type of assessment. They have been on board to assist the CM
         program with our assessment requirements even though they are an additional work
         above and beyond their own programmatic assessment requirements.
   b. Will changing the requirement that students will have to earn a C or better (starting with the
      20-21 incoming class) in all CM core courses create problems?
      1. The faculty believe that this will have a short term negative impact but will provide a
         better student for the industry in the long term. We have debated making this change
         for quite a while. We chose to do so (in part) as a means of combatting student apathy
         due to the booming construction market and employment opportunities.
      2. Also, this change aligns our requirements with the rest of the programs within the SDC
         as well as the rest of the Voiland College of Engineering and Architecture (VCEA).
         Lastly, we believe that this requirement will positively impact the students’ attention to
         other courses that do not have a CstM prefix which has also been a longstanding area
         of concern.
   c. As it relates to the performance criteria and overall evaluation of the curriculum, is grading the
      same throughout all classes?
      1. Yes, as much as can be expected considering that different faculty teach the courses.
         Regardless, everyone is using the same (or similar) grading scale typical within the
         university. Additionally, the faculty have specific grading rubrics for the assessment
         tools to ensure uniformity in grading.
      2. And, ACCE requires that assessment tools (assignments) are to be individual
         assignments not group assignments which also helps to ensure that there is uniformity
         in grading. This mandate has caused the faculty to make revisions, etc. to
         accommodate this requirement which has been insightful.
d. Are the results/outcomes based on an individual assignment within a given course or a grouping of assignments?
   1. It depends on the course and is up to the instructor as the assessment tool could be limited to a single question on a quiz or exam. All of the assessment tools used for this purpose are at a minimum a single assignment but many are a grouping of assignments. Further, those instances where it is a single assignment the SLO topic would have been introduced and reinforced via other assignments. And, if an exam, the exams are a cumulative exam with the intent of assessing the students’ overall knowledge of the course content.

e. In evaluating the courses it was revealed that there are three (3) number of structures courses—why are there that many? And, how has the delivery of these courses been impacted by Architecture not having a dedicated structures instructor?
   1. Clarification was provided to address the naming conventions used within the SDC. The reality is that the Structures I course is a statics and dynamics course that includes an introduction to structural concepts. It was stated that this (statics and dynamics) would be a prerequisite course at other institutions for the remaining structures courses. So, in many ways, the naming convention leads to an incongruity relative to the actual course content. This is a situation that is beyond our control as the courses are technically Architecture courses.
   2. The delivery of courses has been challenging due to the teaching merry-go-round over the last few years and the students have suffered. However, we have found an instructor from the University of Idaho last semester which has made a huge impact. We have negotiated a three (3) year contract with him to teach the courses and are optimistic that he’ll apply for the current Architecture position. Regardless, this addition to the faculty has been well received by the students as he is well respected and is great in the classroom.

f. The results for the surveying course are very concerning…what’s the reasoning?
   1. There are likely three key reasons for this and they have been an ongoing concern that we’ve tried to work with the faculty member to resolve. First, the curriculum for the course (Civil Engineering 302) is civil engineering centric which creates some challenges for the CM students as they don’t have exposure to the same preceding coursework, concepts, and/or software. Second, this is a “short course” wherein it is only a 8 week course rather than the entire semester. This means that there is a lot of content compressed into a shorter period of time. Lastly, most of the course assignments (assessment tools) in this class are done in groups. This is, in part, because it is a large class (158 students in 5 lab sections) so the assignments that can be used for assessment are limited which may impact this as well.
   2. It is worth noting that the professor is willing to take feedback and has continually made changes to the course to make it more relevant to the CM students. Further, it is being proposed to change the course to a “full semester” course next academic year which may also help with some of these issues.
g. There were a few areas of deficiency - how is that evaluated by ACCE and what happens next?
   1. It was stated that the performance criteria are not mandated by ACCE but are set by
      the faculty so ACCE is looking to see if the performance criteria are met. Additionally,
      the ACCE is looking for evaluation and a closing of the loop on assessment which
      requires evaluation by the faculty and adjustments where necessary.
   2. While the deficiencies are a concern, they represent a single data point which may or
      may not be a real problem. The faculty have evaluated the results within their
      respective courses and some faculty will make adjustments based on their perspective
      and student feedback. Other faculty have chosen to not make adjustments at this time
      in an effort to have multiple data points to see if there is a trend.

h. Similarly, there were a few areas where the results were way high. What is the ACCE
   perspective on these results and are they compared to other programs?
   1. Answer is similar to above.
   2. ACCE’s perspective of the results is not an area of concern is but more so, what is the
      program and the faculty doing in response to the results. Further, it was stated that all
      team members on an accreditation visit are instructed that they are not supposed to
      compare curriculum, assessment, etc. to other programs or their own program.

i. What does “written communications...” really mean? And, is there a technical writing course on
   campus that students could be required to take or take as an elective?
   1. Committee discussed that there are technical writing skills but also writing relative
      electronic communications (structure, content, etiquette, etc.) and when they are
      appropriate (yes, no, or set a meeting...if anything confrontational pick up the phone).
   2. It was stated that the curriculum primarily focuses on technical writing (RFI’s, Change
      Orders, responses to RFP’s, etc.) however, several faculty have requirements relative to
      electronic (e-mail) communications in an effort to address some of those concerns.
   3. It was stated that there is a technical writing course on campus that could be used as an
      elective but requiring a specific course would not fit into our curriculum. Further, it was
      stated that several faculty embed technical writing assignments into their course as an
      opportunity for students to enhance their writing skills. And, there are two (2) writing
      in the major courses that support this SLO as well.

j. What does “oral presentation skills...” really mean? Is it just presentations or does it address
   general communication skills necessary for communicating in meetings, etc.?
   1. It was stated that students are required to practice/exhibit their communication skills
      throughout the curriculum with examples provided (presentations in several classes
      and in-class engagement expectations). The faculty believe that they are providing
      numerous opportunities for students to enhance their communication skills.

k. What are the needs relative to specific topical content or SLO requirements?
   1. The program was asked to develop a list of needs relative to topics or content area
      based on an introspective approach/evaluation of their courses and the curriculum as a
      whole. Once the list is developed, the committee and/or advisory board will provide
      resources, contacts, etc. to assist with any needs noted.
3. Discussion of outcomes in the assessment report...successes and areas for improvement
   a. Based on the Q&A mentioned above and additional commentary, the following summarizes the position of the CMAB Curriculum Committee on behalf of the CMAB:
      1. The following text, IF APPROVED, will be included in the CM Assessment Report (appendix C):
         The CMAB Curriculum Committee and the CMAB are committed to the CM program and the curriculum offered to the students. The curriculum was recently reviewed for content relative to topics, etc. and found to be appropriate for the construction industry – providing the students with a robust education and preparing them for the industry.
         In regards to the assessment efforts and outcomes, the CMAB Curriculum Committee is generally pleased with the results. It is understood that this is the first complete cycle of assessment and there is a learning curve for the faculty as it relates to the development of assignments/assessment tools. It is noted that not all of the courses met the desired performance criteria but observations/presumptions were made by the faculty that will lead to necessary modifications in some instances. Where there is uncertainty relative to not meeting performance criteria, modifications are not being made as the faculty are waiting for additional data points to determine if there is a trend.
         The committee is confident that necessary adjustments will be made and the outcomes relative to performance criteria will be representative of faculty adjustments and student efforts. Further, the efforts by the faculty to adopt and embrace this continuous improvement model of assessment is greatly appreciated.

Other items
   a. Next steps...JP to write up comments and add it to the report for AY 18/19 thus finalizing the report (CMAB Responses and Recommendations portion of Appendix C - Observations & Recommendations Report) so that it can be posted on the website per ACCE requirements.
      i. Does the committee want to review before the document is posted?
         1. Yes, JP to send meeting minutes + draft (see above).
         2. Please review draft (in italics above) and provide comments/revisions to JP at your earliest convenience.