

2016-2017 Outcome Reporting Templates for Graduate and Undergraduate Programs

Directions:

- First, please provide the program summary information requested below.
- Table 1: Presentation of student learning outcomes.
 - Each program should have a total of 5 to 8 student learning outcomes (unless otherwise specified by a discipline-specific accreditation requirement).
 - Please make sure to list all of your student learning outcomes. For each outcome, please explain the measure(s) your program uses, and give the achievement target for each outcome/measure pair.
 - For all student learning outcomes you collected data on during the 16-17 academic year, please report your measure(s), achievement targets, and findings.
 - If an achievement target for a given outcome was not met, please provide changes or improvements planned for the upcoming year in the action planning column.
 - If the program did meet the target but is still interested in making improvements, this information should also be provided in the action planning column.
 - In the last column, please provide information on changes that have been made to improve student learning on an outcome in the past and what effects those changes have made in student performance on that outcome.
 - As a reminder, each program should be measuring at least 2-3 student learning outcomes each year and all of the program's outcomes should be measured at least twice in a 5-year time period.
- Table 2: Presentation of program outcomes.
 - Each program should have a total of 2 to 3 program outcomes.
 - Please make sure to list all of your program outcomes. For each outcome, please explain the measure(s) your program uses, and provide an achievement target for each outcome/measure pair.
 - For program outcomes you collected data on during the 16-17 academic year, please report your measure(s), achievement targets, and findings.
 - If the program did not meet the target for a given outcome, please provide changes or improvements planned for the upcoming year in the action planning column.
 - If the program did meet the target but is still interested in making improvements, this information should also be provided in the action planning column.
 - In the last column, please provide comments on any changes that have been made to an outcome in the past, as well as any effects those changes had.
 - As a reminder, each program should be measuring at least 1-2 program outcomes each year and all of a program's outcomes should be measured at least twice in a 5-year time period.
- Lastly, please respond to the general question included at the end of this document.

Program Summary

Degree Program: Department of Building Construction, BS

Department Chair: Dr. Andrew McCoy

Program Mission Statement: Partner with industry in the co-evolution of our curriculum to meet further demands and needs of construction while remaining as current as feasible in technology, processes, and delivery methods.

Note: This mission statement was iteratively developed during faculty meetings and vetted through the department's Industry Futures Committee. This committee is comprised of industry leaders (e.g. CEOs, owners, presidents) who represent local, regional, national and international design, construction and engineering companies.

The underlying principle of the mission statement is agility because the program must reflect and respond to the dynamic nature of the construction industry. As the industry changes, we expect the program to change accordingly such that graduates are prepared to make substantive contributions to the industry of today not the industry of yesterday. Through our strong partnerships with industry (e.g. during bi-annual meetings of the Industry Affiliates Board), the mission statement has changed over time to reflect emergent need.

Table 1: Student Learning Outcomes

Please list all of your student learning outcomes, the assessment measure(s) used to collect data on each outcome, and the achievement target for each outcome/measure pair. Then, list the findings, action plans, and comments you have for each student learning outcome measured during 16-17. As a reminder, each program should be measuring at least 2-3 student learning outcomes each year and all of the outcomes should be measured at least twice in a 5-year time period.

| <p>Student Learning Outcome (SLO) Please include all of your SLO's, even if they were not measured this year.</p> | <p>Assessment Methodology (Measure) Please include all of your measures, even if the outcome was not measured this year.</p> | <p>Target Please include all of your targets, even if the outcome was not measured this year.</p> | <p>2016-2017 AY Findings Please include findings for all outcomes measured this year. Did you meet your target?</p> | <p>Action Planning If your target was not met, how do you plan to improve? Or, if your target was met, is the program planning any changes or other improvements?</p> | <p>Comments on Action Planning Have any changes been made to this outcome in the past? What effects did those changes have?</p> |
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| <p>SLO #1: Create effective written communications appropriate to the construction discipline.</p> | <p>Direct Measures: 1) Faculty evaluate student project work based on a rubric of 5 criteria to assess: <i>focus, structure, mechanics, style, and grammar</i> on a 0 – 3pt scale. What specific project are faculty evaluating? Are students evaluated by multiple faculty members here, or just one? It would be very helpful to have more information about how students are demonstrating this outcome. 2) Industry evaluate student project work based on a rubric of student performance: <i>below standard or industry standard</i>. It</p> | <p>Direct Measures: 80% of students will receive a score of 80% or better on their final capstone assignment. See comments on your measure – it would be very helpful to have additional information about this capstone assignment included there. Since a rubric was mentioned in your measure, you could create a target based on that rubric score. It might look something like this: “80% of students will receive a score of at least 2 out of</p> | <p>Direct Measures Findings: 1) Faculty provided scores that resulted in 94% of students achieving 80% or better. See comments on your measure and target. What rubric ratings did these students receive? For each set of findings reported, also include whether or not the target was met. 2) Industry provided scores that resulted in 98% of students achieving 80% or better. The target for this measure should be revised in light of the comments made</p> | <p>Target was met and trending up (+5%) so no action plan required. Were your findings for all three measures and targets up, or just one of them?</p> | |

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| | <p>would be very helpful to have some additional information here as well. Who from industry is evaluating students? How many industry representatives are rating students? Is this the same project or piece of student work that was used in the first measure?</p> <p>Measuring whether or not students meet a standard is not detailed enough to be considered a direct measure for a student learning outcome. Instead, the program would need to measure <i>the extent to which</i> students achieve the outcome. Many programs find it helpful to use a 3, 4, or 5-point rating scale for assessment purposes.</p> <p>Indirect Measure: Survey of graduating seniors through use of a Likert scale (5 points from strongly disagree to strongly agree) indicating agreement that the BC program</p> | <p>3 for each of the 5 project criteria.”</p> <p>80% of students will receive a score of 80% or better by industry: assessed as below standard or industry standard within for the final capstone assignment. See comments on your target above. This target should also be revised to utilize the rubric mentioned in your measure.</p> <p>INDIRECT MEASURE: 80% of students will report a level of “agree” or better.</p> | <p>in the measure column.</p> <p>Indirect Measures Finding: Students provided scores that resulted in 100% of students achieving 80% or better. What did students achieve 80% or better on? How many students responded with at least “agree” to the survey item mentioned in your measure?</p> | | |
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| | <p>prepared them through written communications appropriate to the construction discipline.</p> <p>When using multiple measures for a single student learning outcome like you are here, it can be helpful to list each measure in its own separate row.</p> | | | | |
| <p>SLO #2: Create effective oral presentations appropriate to the construction discipline.</p> | <p>Direct Measures: 1) Faculty evaluate student project work based on a rubric to assess <i>professionalism, voice quality, minimal use of bulleted lists, strategic use of animations, structural logic, and level of detail</i> on a 0 – 3pt scale. See comments above on your measures for SLO #1. 2) Industry evaluate student project work based on a rubric of student performance: <i>below standard or industry standard</i>. See comments above on your measures for SLO #1.</p> | <p>Direct Measures: 80% of students will receive a score of 80% or better on their final capstone presentation. See comments above on your targets for SLO #1. 80% of students will receive a score of 80% or better by industry as assessed as close to or at industry standards within the rubric for student’s final capstone presentation. See comments above on your targets for SLO #1.</p> | <p>Direct Measures Findings: 1) Faculty provided scores that resulted in 92% of students achieving 80% or better. See comments above on your findings for SLO #1. 2) Industry provided scores that resulted in 91% of students achieving 80% or better. See comments above on your findings for SLO #1. Indirect Measure Finding: Students provided scores that resulted in 100% of students achieving 80% or</p> | <p>Target was met but with minimal downward trend (-1%). No action plan required. Is there any indication as to why this downward trend, although slight, may be occurring?</p> | |

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| | <p>Indirect Measure: Student Survey of graduating seniors through use of a Likert scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them to create oral presentations appropriate to the construction discipline.</p> | <p>Indirect Measure: 80% of students who will agree or strongly agree that the BC program prepared them to create presentations appropriate to the construction discipline.</p> | <p>better. See comments above on your findings for SLO #1.</p> | | |
| <p>SLO #3: Create an effective construction project safety plan.</p> | <p>Direct Measures: 1) Faculty evaluate a construction project safety plan based on a rubric to assess the <i>8 basic requirements of an effective plan</i> on a 0 – 3pt scale. See comments above on your measures for SLO #1. 2) Industry evaluate a construction project safety plan based on a rubric of student performance: <i>below standard or industry standard</i>. See comments above on your measures for SLO #1. Indirect Measure: Student Survey of graduating seniors through use of a Likert</p> | <p>80% of students will receive a score of 80% or better on their construction project safety plan. See comments above on your targets for SLO #1. 80% of students will be assessed as close to or at industry standards within the rubric for student’s construction project safety plan. See comments above on your targets for SLO #1. 80% of students who will agree or strongly agree that the BC program prepared them to</p> | <p>Direct Measures Findings: 1) Faculty provided scores that resulted in 87% of students achieving 80% or better. See comments above on your findings for SLO #1. 2) Industry provided scores that resulted in 78% of students achieving 80% or better. See comments above on your findings for SLO #1. Indirect Measure Finding: Students provided scores that resulted in 100% of students achieving 80% or better. See comments</p> | <p>Target was met but with moderate downward trend (-5%). No action plan required but root cause discussion planned for FA17 faculty retreat. It looks like the target for Measure #2 was not met (although it was very close).</p> | |

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| | <p>scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them to create an effective construction safety plan suitable to industry.</p> | <p>create an effective construction safety plan.</p> | <p>above on your findings for SLO #1.</p> | | |
| <p>SLO #4: Analyze professional decisions based on ethical principles.</p> | <p>Direct Measures: 1) Faculty evaluate students' ability to apply ethical principles to realistic professional scenarios in a formal presentation through use of a 100 point rubric. <i>What criteria is the rubric looking at? Is this presentation associated with a specific course or project that students are involved in?</i> 2) Industry evaluate students' ability to apply ethical principles to realistic professional scenarios in a formal presentation through use of a 100 point rubric. <i>Do industry representatives use the same 100 point rubric that faculty use?</i> Indirect Measure:</p> | <p>80% of students will receive a score of 80% or better on a formal ethics presentation. <i>See comments above on your targets for SLO #1.</i> 80% of students will receive a score of 80% or better by industry on a formal ethics presentation. <i>See comments above on your targets for SLO #1.</i> 80% of students who will agree or strongly agree that the BC program prepared them to analyze professional decisions based on ethical principles.</p> | <p>Yes, 100% of students received a score of 80% or better on their formal ethics presentation. Faculty score and industry scores were averaged to arrive at student final grade. <i>Since these are separate measures, your findings should also be presented separately. What percentage of students received a score of 80 or higher based on faculty ratings? What percentage of students received a score of 80 or higher based on industry ratings?</i> Was your indirect measure used this year? If so, it would also be helpful to have those findings included here.</p> | <p>Target met, no action plan required.</p> | |

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| | <p>Student Survey of graduating seniors through use of a Likert scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them to analyze professional decisions based on ethical principles.</p> | | | | |
| <p>SLO #5: Apply electronic based technology to manage the construction process.</p> | <p>Direct Measures: 1) Faculty evaluate student project work based on a rubric to <i>determine utilization of products to produce basic documentation for site plan, floor plan, elevations, and structural plan on a specific project</i> using a 0 – 3pt scale. <i>See comments above on your measures for SLO #1.</i> 2) Industry evaluate student project based on a rubric to rate ability to produce basic documentation for site plan, floor plan, elevations, and structural plan on a specific project as either <i>close to</i> or <i>at industry standard</i>. <i>See comments above on</i></p> | <p>80% of students will receive a score of 80% or better on a final student project utilizing electronic based technology. <i>See comments above on your targets for SLO #1.</i></p> <p>80% of students will be assessed as close to or at industry standards within the rubric for a final student project utilizing electronic based technology. <i>See comments above on your targets for SLO #1.</i></p> <p>80% of students who will agree or</p> | <p>Direct Measures Findings: 1) Faculty provided scores that resulted in 92% of students achieving 80% or better. <i>See comments above on your findings for SLO #1.</i> 2) Industry provided scores that resulted in 84% of students achieving 80% or better. <i>See comments above on your findings for SLO #1.</i></p> <p>Indirect Measures Finding: Students provided scores that resulted in 100% of students achieving 94% or better. <i>See comments</i></p> | <p>Target met and trending up (+7%). No action plan required.</p> | |

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| | <p>your measures for SLO #1.</p> <p>Indirect Measure: Student Survey of graduating seniors through use of a Likert scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them to apply electronic-based technology to manage the construction process.</p> | <p>strongly agree that the BC program prepared them to apply electronic based technology to manage the construction process.</p> | <p>above on your findings for SLO #1.</p> | | |
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Table 2: Program Outcomes

Please list all of your program outcomes, the assessment measure(s) used to collect data on each outcome, and the achievement target for each outcome/measure pair. Then list the findings, action plans, and comments you have for each program outcome. As a reminder, each program should be measuring at least 1-2 program outcomes each year and all of a program’s outcomes should be measured at least twice in a 5-year time period.

| <p>Program Outcome (PO) Please include all of your PO’s, even if they were not measured this year.</p> | <p>Assessment Methodology (Measure) Please include all of your measures, even if the outcome was not measured this year.</p> | <p>Target Please include all of your targets, even if the outcome was not measured this year.</p> | <p>2016-2017 AY Findings Please include findings for all outcomes measured this year. Did you meet your target?</p> | <p>Action Planning If your target was not met, how do you plan to improve? Or, if your target was met, is the program planning any changes?</p> | <p>Comments on Action Planning Have any changes been made to this outcome in the past? What effects did those changes have?</p> |
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| <p>PO #1: Provide opportunities for students to gain employment in the construction industry after graduation. <i>How can the program provide opportunities for students to gain employment? Since your measure seems to be focused on whether or not students found employment, you might consider rephrasing this outcome to state something like: “Students will obtain employment in the construction industry within 3 months of graduation.”</i></p> | <p>Department Graduating Senior Exit Survey in which students are specifically asked whether they have found employment, still looking, attending graduate school, or service in the military. Students also list number of job offers, salary range, location and name of firm. <i>When is this survey administered? If sent before or near the time of graduation, how does the program track students who gain employment 1-3 months after graduation, as indicated in your target?</i></p> | <p>90% of students will report having found relevant employment within 3 months of graduations.</p> | <p>Yes, 100% of Fall 16 and Spring 17 graduating seniors had employment upon graduation.</p> | <p>No new actions needed. MLSoC career fairs continue to grow to offer even more employment opportunities for our students. <i>See comments on your measure. It seems as though the program might actually be interested in two separate program outcomes here – one focused on tracking whether students obtain employment, and perhaps another focused on attendance or utilization of departmental career fairs.</i></p> | |
| <p>PO #2: Create areas of specializations/tracks for students to pursue an area of interest</p> | <p>Annual student survey of each student’s choice of specialization in which they must indicate year</p> | <p>Specialization areas (tracks) will maintain enrollment of at</p> | <p>25% of students enrolled in VDC track, 7% in structures track,</p> | <p>Prior to 15-16, we didn't systematically track enrollment in specialization areas. After</p> | |

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| <p>within the BC curriculum. Is the program actively creating new specializations/tracks? Your measure and target seem to be more focused on maintaining a certain level of enrollment in each area, so the program might want to consider revising this outcome to focus on that more specifically.</p> | <p>in program and track selection. See comments on your outcome. If your outcome were to be revised as suggested, the program should consider implementing a measure that utilizes departmental data to track enrollment in each area.</p> | <p>least 20% of the total number of students enrolled in the program. See comments on your outcome and measure. This would be a good target for an outcome focused on maintaining enrollment in each track offered.</p> | <p>27% in sustainability track, 33% in real estate track, 7% undecided.</p> | <p>we started tracking enrollment in 15-16, we discovered that enrollment in the structures track was below our target. Discussion of whether we should continue to offer this specialization is scheduled for the F17 faculty retreat.</p> | |
| <p>PO #3: Prepare students for field and office leadership.</p> | <p>Student Survey of graduating seniors through use of a Likert scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them for field and office leadership.</p> <p>Industry survey during final capstone presentation as to whether they feel the BC program has prepared the students for field and office leadership. This measure is an excellent addition to your assessment process with this particular outcome.</p> | <p>80% of students will indicate that they agree that the program has prepared them for field and office leadership.</p> <p>Has the program determined what percentage of industry representatives should feel that the BC program prepared students for field and office leadership? Your target should be revised to incorporate this as well, or a second target developed to specifically address</p> | <p>85% of student surveyed agreed that BC had prepared them for field and office leadership. This is a significant increase from last year's findings. Has anything changed that could have shifted student perceptions?</p> <p>When does the program plan to implement your second measure for this outcome?</p> | <p>No action needed.</p> | |

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| | | your second measure. | | | |
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General Question:

Is there any additional information you would like to share that describes your program and/or the efforts you have made to improve student learning or your program quality?

2017-2018 Assessment Reporting Template for Graduate and Undergraduate Programs

Directions:

- First, please provide the program summary information requested below.
- Table 1: Presentation of student learning outcomes (SLOs).
 - Each program should have a *total of 5 to 8 SLOs*, unless otherwise specified by a discipline-specific accrediting body.
 - Please make sure to list all of your SLOs, along with corresponding measures and targets.
 - Please also provide findings and comments on your findings for at least 2 to 3 of your SLOs each year.
 - An action plan for at least one SLO should be provided each year, even if all SLO targets were met.
- Table 2: Presentation of program outcomes (POs).
 - Each program should have a *total of 2 to 3 POs*.
 - Please make sure to list all of your POs, along with corresponding measures and targets.
 - Please also provide findings and comments on your findings for at least 1 to 2 of your POs each year.
- General Question: The general questions were added in 2016-2017. Please respond to at least one of the general questions at the end of this document.

Reports are due June 30, 2018. If you need assistance, please do not hesitate to contact Bethany Bodo, Director, Assessment and Evaluation, Office of Academic Decision Support, at bbodo@vt.edu.

Program Summary

Degree Program: Department of Building Construction, BS

Department Chair: Dr. Andrew McCoy

Point of Contact Regarding Assessment (if different than Chair): Renee Ryan

Program Mission Statement: Partner with industry in the co-evolution of our curriculum to meet further demands and needs of construction while remaining as current as feasible in technology, processes, and delivery methods.

Note: This mission statement was iteratively developed during faculty meetings and vetted through the department's Industry Futures Committee. This committee is comprised of industry leaders (e.g. CEOs, owners, presidents) who represent local, regional, national and international design, construction and engineering companies. The underlying principle of the mission statement is agility because the program must reflect and respond to the dynamic nature of the construction industry. As the industry changes, we expect the program to change accordingly such that graduates are prepared to make substantive contributions to the industry of today not the industry of yesterday. Through our strong partnerships with industry (e.g. during bi-annual meetings of the Industry Affiliates Board), the mission statement has changed over time to reflect emergent need.

Table 1: Student Learning Outcomes

As a reminder, each program should have a total of 5 to 8 student learning outcomes, and be measuring at least 2 to 3 each year. All student learning outcomes should be measured at least twice in a 5-year time period.

| SLO Process | | | | SLO Use of Results | | |
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| Student Learning Outcomes (SLOs) <i>Please include <u>all</u> of your SLOs, even if they were not measured this year.</i> | Assessment Measures <i>Please include a measure for <u>each SLO</u>, even if the outcome was not measured this year.</i> | Targets <i>Please include a target for <u>each SLO</u>, even if the outcome was not measured this year.</i> | 2017-2018 AY Findings <i>Please include findings for <u>each SLO</u> measured this year. Did you meet your target(s)?</i> | Comments on Findings <i>Please include comments on your findings for <u>each SLO</u> measured this year. What do these findings mean to your program? When do you plan to measure the outcome again? Are you considering making changes to your assessment plan based on these findings? (Changes for improving student learning on an outcome should be included in the Action Planning column.)</i> | Action Planning <i>Is the program planning any changes or other improvements based on these findings? An action plan should be included for all SLOs with unmet targets OR <u>at least one SLO</u> each year, even if all targets were met.</i> | Comments on Action Planning <i>What action plans have been implemented for this outcome in the past? How have those changes affected student learning and/or program quality?</i> |
| SLO #1: Create effective written communications appropriate to the construction discipline. | Direct Measure: BC 4444 Capstone binder. In BC 4444, students are required to complete a capstone presentation and submit a binder on a design build project based on a RFP (request for proposal) as supplied by an industry partner. | 80% of the students will meet or exceed expectations on the rubric of 5 criteria to assess: focus, structure, mechanics, style, and grammar on a 0 – 3pt scale. | | | | |

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| | <p>Faculty evaluate student project work based on a rubric of 5 criteria to assess: focus, structure, mechanics, style, and grammar on a 0 – 3pt scale.</p> | | | | | |
| | <p>Indirect Measure: Graduating Senior Exit Interview</p> <p>A question on the exit survey pertaining to the confidence in the program preparing them to create effective written communications appropriate to the construction discipline. All questions are on a 5-point Likert scale (Importance scale: 1 = strongly</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to create effective written communications appropriate to the construction discipline.</p> | | | | |

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| | agree, 2 = agree, 3 = neither agree or disagree, 4 = agree, 5 = strongly disagree.) | | | | | |
| SLO #2: Create effective oral presentations appropriate to the construction discipline. | <p>Direct Measure: BC 2104 Formal presentation BC 2104.</p> <p>In BC 2104, students are required to give a formal presentation in front of faculty and classmates on a preassigned topic. The presentation will be rated with a rubric designed to evaluate the student's ability to communicate effectively in an oral presentation.</p> | <p>Oral presentation targets: 80% of the students will meet or exceed expectations on the rubric items pertaining to organization, presentation format / style, use of communication graphics, mechanics and timing by scoring a 4 or 5 on the rubric scale of 5 being excellent and 1 being poor.</p> | <p>85% of the students presenting received a rating of 4 or 5 on the rubric scale of 5 being excellent and 1 being poor.</p> <p>Target: Met</p> | <p>Target was met but with a moderate downward trend (-7%) from the previous year. One reason for this is that a different course is being used this year for the direct measurement. In the past, BC 4444 capstone was used as an assessment. The redesigned rubric for capstone concentrates more on the design, construction, and cost than the actual oral presentation skills. BC 2104, Building Effective Construction Teams is now used as students present a total of 3 times within the course. There is a stronger emphasis on the skills in this class with a younger student group (sophomore vs seniors) and this resulted in the lower percentage.</p> | <p>The department will examine these findings as compared to the direct assessments that will be implemented during the 2018-2019 academic year.</p> | <p>No previous action plans were implemented for this area.</p> |
| | Indirect | 80% of | 28 students | Students assessed at the | Action Plan: The | No previous action |

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| | <p>Measure: Graduating Senior Exit Interview</p> <p>A question on the exit survey pertaining to the confidence in the program preparation to create effective oral presentations appropriate to the construction discipline. All questions are on a 5-point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree.)</p> | <p>students surveyed will agree or strongly agree that the BC program prepared them to create effective oral presentations appropriate to the construction discipline.</p> | <p>completed the graduating senior exit survey.</p> <p>96% of students rated agree or strongly agree that the BC program prepared them to create an effective oral presentations appropriate to the construction discipline.</p> <p>Target: Met</p> | <p>graduating level are confident of their abilities to present orally. Starting with BC 2104 and continuing through the Integrated Studio sequence of courses (BC 2064, 3064, 4064) and capstones (BC 4444) presentation skills are reinforced and mastered.</p> | <p>instructor of BC 2104 will incorporate a peer review assignment of fellow classmates' presentations to better gauge the indirect measurement in the semester in which the students are measured directly.</p> | <p>plans were implemented for this area.</p> |
| <p>SLO #3: Create a construction safety plan.</p> | <p>Direct Measure: BC 4444 Capstone presentation and capstone binder.</p> | <p>80% of students will receive a score of 8 out of 10 on the project criteria rubric</p> | <p>81% of the seniors presenting before faculty and industry received a</p> | <p>Target was met but with a moderate downward trend (-6%). This makes the second year that this SLO has trended down.</p> | <p>Action Plan: The department is conducting an extensive curriculum review to determine gaps and</p> | <p>No previous action plans were implemented for this area.</p> |

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| | <p>In BC 4444, students are required to complete a capstone presentation and submit a binder on a design build project based on a RFP (request for proposal) as supplied by an industry partner. A requirement of the site logistics plan is the safety plan.</p> | <p>as scored by participating faculty and industry guests.</p> | <p>score of 8 out of 10 on the project criteria rubric. Target: Met</p> | | <p>redundancies within the BC core curriculum. This SLO is mapped to BC 1224, 2014, & 2024. Due to the downward trend in this SLO, review to determine if there is a gap is to be addressed. Actions may include the addition of more construction safety plan assignments in the fundamental courses to reinforce SLO before final assessment measure.</p> | |
| | <p>Indirect Measure: Graduating Senior Exit Interview A question on the exit survey pertaining to the confidence in the program preparation to create a construction safety plan. All questions are on a 5-</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to create an effective construction safety plan.</p> | <p>28 students completed the graduating senior exit survey. 82% of students rated agree or strongly agree that the BC program prepared them to create an effective construction safety plan.</p> | <p>Target was met but with a severe downward trend (-18%).</p> | <p>The downward trend within this SLO will be addressed within the curriculum review and discussed at the annual summer faculty retreat. This SLO is mapped to BC 1224, 2014, & 2024. Due to the downward trend in this SLO, review to determine if there is a gap is to be addressed. Actions may include the addition of more</p> | <p>No previous action plans were implemented for this area.</p> |

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| | point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = a agree, 5 = strongly disagree.) | | | | construction safety plan assignments in the fundamental courses to reinforce SLO before final assessment measure. | |
| SLO #4: Analyze professional decisions based on ethical principles. | <p>Direct Measure: BC 2104</p> <p>Faculty evaluate students' ability to apply ethical principles to realistic professional scenarios in a formal presentation through use of a 100 point rubric designed to evaluate the student's ability to analyze professional decisions based on ethical</p> | Ethics presentation targets: 80% of the students will meet or exceed expectations on the rubric items pertaining to level of understanding exhibited about ethics case study, degree of preparation and research in analyzing the ethical questions by scoring a 4 or 5 on the rubric scale of 5 being excellent and 1 being poor. | <p>100% of the students presenting received a rating of 4 or 5 on the rubric scale of 5 being excellent and 1 being poor.</p> <p>Target: Met</p> | BC 2104 reinforces and masters ethical reasoning within the course material, guest lectures, case studies, and their final presentation. | Target Met 100%. No action plan needed. | No previous action plans were implemented for this area. |

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| | <p>principles.</p> <p>Indirect Measure: Graduating Senior Exit Interview</p> <p>A question on the exit survey pertaining to the confidence in the program preparing them to analyze professional decisions based on ethical principles. All questions are on a 5-point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = a agree, 5 = strongly disagree.)</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to analyze professional decisions based on ethical principles.</p> | <p>28 students completed the graduating senior exit survey.</p> <p>82% of students rated agree or strongly agree that the BC program prepared them to analyze professional decisions based on ethical principles.</p> <p>Target: Met</p> | <p>It is interesting to note that the students' confidence in their ability to analyze professional decisions based on ethical principles wanes from sophomore to senior year.</p> | <p>Target Met. No action plan needed. We may wish to reinforce however in a senior level course through a lecture or assignment.</p> | <p>No previous action plans were implemented for this area.</p> |
| <p>SLO #5: Apply electronic based technology to manage the</p> | <p>Direct Measures: Faculty</p> | <p>80% of students will receive a score of 80% or</p> | | | | |

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| <p>construction process.</p> | <p>evaluate student project work based on a rubric to <i>determine utilization of products to produce basic documentation for site plan, floor plan, elevations, and structural plan on a specific project</i> using a 0 – 3pt scale.</p> | <p>better on a final student project utilizing electronic based technology.</p> | | | | |
| | <p>Indirect Measure: Graduating Senior Exit Interview A question on the exit survey pertaining to the confidence in the program preparing them to apply electronic based technology to manage the construction process. All questions are on a 5-point Likert sca</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to apply electronic based technology to manage the construction process.</p> | | | | |

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| | le (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree.) | | | | | |
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Table 2: Program Outcomes

As a reminder, each program should have a total of 2 to 3 program outcomes, and be measuring at least 1 to 2 each year. All program outcomes should be measured at least twice in a 5-year time period.

| PO Process & Use of Results | | | | | | |
|--|---|--|--|---|---|---|
| Program Outcomes (POs) <i>Please include <u>all</u> of your POs, even if they were not measured this year.</i> | Assessment Measures <i>Please include a measure <u>for</u> each PO, even if the outcome was not measured this year.</i> | Targets <i>Please include a target <u>for</u> each PO, even if the outcome was not measured this year.</i> | 2017-2018 AY Findings <i>Please include findings <u>for</u> each PO measured this year.</i> <i>Did you meet your target(s)?</i> | Comments on Findings <i>Please include comments on your findings <u>for</u> each PO measured this year. What do these findings mean to your program? When do you plan to measure the outcome again? Are you considering making changes to your assessment plan based on these findings? (Changes for improving program quality and/or the student experience should be included in the Action Planning column.)</i> | Action Planning <i>Is the program planning any changes or other improvements based on these findings? An action plan should be included <u>for</u> all POs with <u>unmet</u> targets.</i> | Comments on Action Planning <i>What action plans have been implemented for this outcome in the past? How have those changes affected the student experience and/or program quality?</i> |
| PO #1: Provide opportunities for students to gain employment in the construction | Department Graduating Senior Exit Survey in which students | 90% of students will report having found relevant employment | Target: Met. 100% of Fall 17 and Spring 18 graduating | MLSOC hosts two career and internship fairs annually and students routinely have 2 – 3 internships completed upon graduation. This results in high job | Target met at 100%. No action plan needed. | No previous action plans were implemented for this area. |

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| <p>industry after graduation within 3 months of graduation.</p> | <p>are specifically asked whether they have found employment, still looking, attending graduate school, or service in the military. Students also list number of job offers, salary range, location and name of firm. This survey is sent out an exit interview scheduled during exam week and before graduation. Any student still considering job offers is followed up by email the week after graduation to determine full placement of all BC students.</p> | <p>within 3 months of graduations.</p> | <p>seniors had employment or indicated graduate school or military service upon graduation.</p> | <p>placement of our students.</p> | | |
| <p>PO #2: Maintain adequate</p> | <p>Annual student survey of each</p> | <p>Specialization areas (tracks)</p> | | | | |

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| <p>enrollment in areas of specializations/tracks for students to pursue an area of interest within the BC curriculum.</p> | <p>student's choice of specialization in which they must indicate year in program and track selection. Department will utilize departmental data to track enrollment in each track.</p> | <p>will maintain enrollment of at least 20% of the total number of students enrolled in the program. Tracks without the minimum of 20% enrollment will be evaluated for content and need of continuation within the major.</p> | | | | |
| <p>PO #3: Prepare students for field and office leadership.</p> | <p>Student Survey of graduating seniors through use of a Likert scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them for field and office leadership.</p> | <p>80% of students will indicate that they agree that the program has prepared them for field and office leadership.</p> | <p>Target: Met 89% of students surveyed agreed that BC had prepared them for field leadership. 96% of students surveyed agreed that BC had prepared them for office leadership.</p> | <p>Upward trend in student perceptions for 2 years. The department did break this down into two separate questions on the survey to determine which area they feel they are the best prepared.</p> | <p>Action Plan: The department would like to add an assessment component with a question added to the industry final capstone grade sheet as to whether they feel the BC program has prepared students for field and office leadership. This was discussed but not implemented in this year's capstone presentation</p> | <p>No previous action plans were implemented for this area.</p> |

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| | | | | | <p>sheets. This is part of an action plan moving forward to have in place for the 2018 – 2019 school year.</p> | |
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General Question:

Please answer at least one of the following questions:

- Is there any additional information not included in your assessment plan that you would like to share that describes efforts you have made to improve student learning, program quality, and/or the student experience?
- What have you learned about your program or your students as a result of engaging in the assessment process?
- What external factors are driving or informing your assessment practices?

External factors driving our assessment practices are the accreditation requirements for the American Council for Construction Education (ACCE). The objective of the ACCE review and assessment is to evaluate our organization, adequacy, completeness of our courses and effectiveness of our academic program so that we can continuously make modifications and adjustments to improve and meet the changing needs of academia and our construction industry. Data is collected from individual faculty, graduating seniors and industry focus groups. Data is also used to plot trends and determine current strengths and weaknesses.

2018-2019 Assessment Reporting Template for Graduate and Undergraduate Programs

Directions:

- First, please provide the program summary information requested below.
- Table 1: Presentation of student learning outcomes (SLOs).
 - Each program should have a **total of 5 to 8 SLOs**, unless otherwise specified by a discipline-specific accrediting body.
 - Please make sure to **list all of your SLOs**, along with corresponding measures and targets.
 - Please also **provide findings and comments** on your findings **for at least 2 to 3 of your SLOs** each year.
 - An action plan for **at least one SLO** should be provided each year, *even if* all SLO targets were met.
- Table 2: Presentation of program outcomes (POs).
 - Each program should have a **total of 2 to 3 POs**.
 - Please make sure to **list all of your POs**, along with corresponding measures and targets.
 - Please also **provide findings and comments** on your findings **for at least 1 to 2 of your POs** each year.
- General Question: A general question was added in 2016-2017, with additional questions included as of 2017-2018. Please **respond to at least one** of the general questions at the end of this document.

Reports are due **June 30, 2019**. If you need assistance, please do not hesitate to contact Bethany Bodo, Director, Assessment and Evaluation, Office of Academic Decision Support, at bbodo@vt.edu.

Program Summary

Degree Program: Department of Building Construction, BS

Department Chair: Dr. Andrew McCoy

Point of Contact Regarding Assessment (if different than Chair): Renée Ryan

Program Mission Statement: Partner with industry in the co-evolution of our curriculum to meet further demands and needs of construction while remaining as current as feasible in technology, processes, and delivery methods.

Note: This mission statement was iteratively developed during faculty meetings and vetted through the department's Industry Futures Committee. This committee is comprised of industry leaders (e.g. CEOs, owners, presidents) who represent local, regional, national and international design, construction and engineering companies. The underlying principle of the mission statement is agility because the program must reflect and respond to the dynamic nature of the construction industry. As the industry changes, we expect the program to change accordingly such that graduates are prepared to make substantive contributions to the industry of today not the industry of yesterday. Through our strong partnerships with industry (e.g. during bi-annual meetings of the Industry Affiliates Board), the mission statement has changed over time to reflect emergent need.

Table 1: Student Learning Outcomes

As a reminder, each program should have a total of 5 to 8 student learning outcomes, and be **measuring at least 2 to 3** each year. All student learning outcomes should be measured at least twice in a 5-year time period.

| SLO Process | | | | SLO Use of Results | | |
|--|---|---|---|--|--|--|
| Student Learning Outcomes (SLOs) Please include <u>all of your SLOs</u> , even if they were not measured this year. | Assessment Measures Please include a measure for <u>each SLO</u> , even if the outcome was not measured this year. | Targets Please include a target for <u>each SLO</u> , even if the outcome was not measured this year. | 2018-2019 AY Findings Please include findings for <u>each SLO</u> measured this year. Did you meet your target(s)? | Comments on Findings Please include comments on your findings for <u>each SLO</u> measured this year. What do these findings mean to your program? When do you plan to measure the outcome again? Are you considering making changes to your assessment plan based on these findings? (Changes for improving student learning on an outcome should be included in the Action Planning column.) | Action Planning Is the program planning any changes or other improvements based on these findings? An action plan should be included for all SLOs with unmet targets OR <u>at least one SLO</u> each year, even if all targets were met. | Comments on Action Planning What action plans have been implemented for this outcome in the past? How have those changes affected student learning and/or program quality? |
| SLO #1: Understand the basic principles of structural behavior. | Direct Measure: BC 2214 Final Exam Generally, overall final exam scores are not good measures of a single student learning outcome. One reason for this is that often final exams contain several different concepts and learning areas for a course. It is more appropriate to choose a specific set of items that match the SLO of interest. Having a broad student learning outcome and a broad measure for that outcome provides the program with very little information on potential areas | 80% of the students will score 80% or higher on the final exam. | Final Exam results are as follows: Max 49.8 Avg 42.2 Min 24.0 St Dev 5.4 Target Met (84%) | Pleased with results. This is a difficult class but Dr. Clark is excellent in breaking it down for the students to understand. We will plan to measure again next year as 84% is above the 80% set target but it is still not as high as the department would like. Please see comments in the measure column. | Target met. No action plan needed. | |

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| | for improvement. | | | | | |
| | <p>Indirect Measure: Graduating Senior Exit Interview A question on the exit survey pertaining to the confidence in the program to understand the basic principles of structural behavior. All questions are on a 5- point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = agree, 5 = strongly disagree.)</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to understand the basic principles of structural behavior.</p> | <p>97% of students surveyed in their exit survey strongly agreed that they understood the basic principles of structural behavior.</p> | | Target Met. | |
| <p>SLO #2: Create effective oral presentations appropriate to the construction discipline</p> | <p>Direct Measure: BC 2104 Formal presentation BC 2104. In BC 2104, students are required to give a formal presentation in front of instructor and classmates on a preassigned topic. The presentation will be rated with a rubric designed to evaluate the student’s ability to communicate effectively in an oral presentation. The instructor provides the final rating of the student.</p> | <p>Oral presentation targets: 80% of the students will score 80% or higher on the assignment. Rubric items pertain to organization, presentation format / style, use of communication graphics, mechanics and timing.</p> | <p>When will the program measure this outcome again?</p> | | | |
| | <p>Indirect Measure: Graduating Senior Exit Survey A question on the exit survey pertaining to the confidence in the program preparation to create effective oral presentations appropriate to the construction discipline. All questions are on a 5- point Likert scale (Importance scale:</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to create effective oral presentations appropriate to the construction discipline.</p> | <p>How often is the exit survey conducted vs. the exit interview?</p> | | | |

| | 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = agree, 5 = strongly disagree.) | | | | | | | | | | | | | |
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| <p>SLO #3: Create a construction safety plan.</p> | <p>Direct Measure: BC 2024 Safety Plan Assignment</p> <p>Please see comments under the measure for SLO #1. Is the only aspect evaluated for this assignment the details of the safety plan? Sometimes in projects other aspects are included in the overall grade (e.g., writing ability, presentation of tables).</p> <p>Last year the program used the BC 4444 course and used a rubric. Could this same rubric be used for this course? And then compared to findings from the 4000-level course to look at student growth?</p> | <p>80% of students will receive a grade of 80% or higher on a construction safety plan assignment.</p> | <table border="1"> <tr> <td>Avg Score</td> <td>3.84</td> </tr> <tr> <td>High score</td> <td>4</td> </tr> <tr> <td>Low Score</td> <td>0</td> </tr> <tr> <td>Target Met</td> <td>96%</td> </tr> </table> | Avg Score | 3.84 | High score | 4 | Low Score | 0 | Target Met | 96% | <p>In the 2017/18 assessment, target was met but with a moderate downward trend (-6%). Because of this and the action plan put forth in the 2017/18 assessment cycle, the department curriculum committee did a tracking of construction safety across the BC curriculum. Gaps were determined and 2 courses were redesigned and put through governance to insert more safety into the content. Safety modules were also added immediately to existing courses. This is of high interest to our Industry Board Members. We would like to reevaluate this in 2 years to determine the effect of adding the additional safety content. (The information provided here is great but should be in the last column where programs are asked to discuss the results of previous action plans.) Will the program be examining BC 4444 in the future?</p> | <p>Target Met – No action plan needed.</p> | |
| Avg Score | 3.84 | | | | | | | | | | | | | |
| High score | 4 | | | | | | | | | | | | | |
| Low Score | 0 | | | | | | | | | | | | | |
| Target Met | 96% | | | | | | | | | | | | | |
| | <p>Indirect Measure Graduating Senior Exit Survey A question on the exit survey pertaining to the confidence in the program preparation to create a construction safety</p> | <p>80% of students surveyed will agree or strongly agree that the BC program prepared them to create a construction</p> | <p>89% of students surveyed in their exit survey strongly agreed that they understood the basic principles of structural behavior.</p> | | <p>Target Met – No action plan needed.</p> | | | | | | | | | |

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| | plan. All questions are on a 5-point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = agree, 5 = strongly disagree.) | safety plan. | Did you mean safety? | | | | | | | | | | | |
| SLO #4: Analyze professional decisions based on ethical principles. | <p>Direct Measure: BC 2104</p> <p>Individual Ethical Case Study</p> <p>How is this evaluated? Who evaluates the case study?</p> <p>Also, similar to comments made above, the program would need to be sure that they are only evaluating ethical decisions when giving a rating. If the overall score incorporates other learning areas (like ability to analyze the case), it should not be included as part of the evaluation of this specific learning area.</p> | <p>80% of students will receive a score of 80% or higher on an individual case study assignment provided by industry of a real-life ethical situation experienced. Case study is graded with a rubric to determine how well they applied ethical principles to the given questions. Highlighted information as well as responses to the questions below should be presented in the previous column. How many rubric items are included? What is the scale?</p> | <table border="1"> <tr> <td>Avg Score</td> <td>4.26</td> </tr> <tr> <td>High Score</td> <td>5</td> </tr> <tr> <td>Low Score</td> <td>0</td> </tr> <tr> <td>Target Met</td> <td>85%</td> </tr> </table> | Avg Score | 4.26 | High Score | 5 | Low Score | 0 | Target Met | 85% | BC 2104 reinforces and masters ethical reasoning within the course material, guest lectures, case studies, and a final team presentation. | Although target was met for this outcome, the instructor would like to have a higher average within this assignment. This is also a student learning outcome for our accrediting body. As an action plan, moving the assignment due date to after the industry guest lecture on construction ethics is a strategic move to have the content fresh in the students' minds. | |
| Avg Score | 4.26 | | | | | | | | | | | | | |
| High Score | 5 | | | | | | | | | | | | | |
| Low Score | 0 | | | | | | | | | | | | | |
| Target Met | 85% | | | | | | | | | | | | | |
| | <p>Indirect Measure:</p> <p>Graduating Senior Exit Survey</p> <p>A question on the exit survey pertaining to the confidence in the program preparing them to analyze professional decisions based on ethical principles. All questions are on a 5</p> | 80% of students surveyed will agree or strongly agree that the BC program prepared them to analyze professional decisions based on ethical principles. | 89% of students surveyed in their exit survey strongly agreed that they were well prepared to analyze professional decisions based on ethical principles. | Target Met. | | | | | | | | | | |

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| | point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree.) | | | | | |
| SLO #5: Create construction project cost estimates. | <p>Direct Measure: BC 4444</p> <p>Assemblies Estimating Standard Foundation Assignment</p> <p>This seems to be a new student learning outcome for the program. The program should review all the above comments regarding using overall grades on projects or exams for assessment.</p> | 80% of students will receive a score of 80% or higher on an Assemblies Estimating Standard Foundation Assignment. | | | | |
| | <p>Indirect Measure</p> <p>Graduating Senior Exit Survey</p> <p>A question on the exit survey pertaining to the confidence in the program preparation to create a construction project cost estimate. All questions are on a 5- point Likert scale (Importance scale: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree.)</p> | 80% of students surveyed will agree or strongly agree that the BC program prepared them to create a construction project cost estimate. | | | | |

Table 2: Program Outcomes

As a reminder, each program should have a total of 2 to 3 program outcomes, and be **measuring at least 1 to 2** each year. All program outcomes should be measured at least twice in a 5-year time period.

| PO Process & Use of Results | | | | | | |
|--|---|--|--|---|--|--|
| Program Outcomes (POs) Please include <u>all of your POs</u> , even if they were not measured this year. | Assessment Measures Please include a measure <u>for each PO</u> , even if the outcome was not measured this year. | Targets Please include a target <u>for each PO</u> , even if the outcome was not measured this year. | 2018-2019 AY Findings Please include findings <u>for each PO</u> measured this year. Did you meet your target(s)? | Comments on Findings Please include comments on your findings <u>for each PO</u> measured this year. What do these findings mean to your program? When do you plan to measure the outcome again? Are you considering making changes to your assessment plan based on these findings? (Changes for improving program quality and/or the student experience should be included in the Action Planning column.) | Action Planning Is the program planning any changes or other improvements based on these findings? An action plan should be included <u>for all POs with unmet targets</u> . | Comments on Action Planning What action plans have been implemented for this outcome in the past? How have those changes affected the student experience and/or program quality? |
| PO #1: Student employment in the construction industry within 3 months of graduation. <i>Since the program is really measuring this before graduation, the program outcome should probably state</i> | Department Graduating Senior Exit Survey in which students are specifically asked whether they have found employment, still looking, attending graduate school, or service in the military. Students also list number of job offers, salary range, location and name of firm. This survey is sent out prior to the exit interview scheduled during exam week and before graduation. Any student still considering job offers is followed up by email the week after | 90% of students will report having found relevant employment within 3 months of graduation. <i>This seems like a high target if the program is only interested in tracking employment. Are the numbers of students going on to graduate school very small?</i> | Target Met. | The senior exit survey was sent out to students on May 8, 2019. 83% (52) of the Spring 2019 BC class received job offers before graduating. Of those, 66% (39) received 2 or less employment offers, 28% (16) received 4 or less offers, and 6% (4) received > 4 employment offers. By the May 11 th , senior exit interview with the Department Head, Assistant Director of Student Affairs, and Senior Academic Advisor, 9% more indicated they had accepted offers. Others were | No action plan, but the department will be watching this to get it back to 100% by graduation. | |

| <p>“by graduation.”</p> | <p>graduation to determine full placement of all BC students.</p> | | | <p>negotiating. This did put us at our met target.</p> | | | | | | | | | | | | | | |
|--|---|---|---|--|---|----------------|----------------|--|--------------|-----|-----|-----|---------------|-----|-----|-----|--|--|
| <p>PO #2: Maintain adequate enrollment in areas of tracks/concentrations.</p> | <p>Annual student survey of each student’s choice of specialization in which they must indicate year in program and track selection. Department will utilize departmental data to track enrollment in each track.</p> | <p>Concentration areas (tracks) will maintain enrollment of at least 20% of the total number of students enrolled in the program. Tracks without the minimum of 20% enrollment will be evaluated for content and need of continuation within the major.</p> | <p>Target: Not Met Survey findings:</p> <ul style="list-style-type: none"> • Real Estate Double Major (39%) • Sustainable (30%) • Virtual Design (22%) • Structural (9%) | <p>The Structural track involves higher math as a prerequisite for 3 courses in the College of Engineering. The challenging coursework does make this less desirable when students choose their track selection.</p> | <p>Action Plan: Target the change of majors that come to us from the Engineering department. They may come to us with the higher math in place. Run the survey again in Spring 2020 to determine if the number rises. If it remains below 20% then a decision needs to be made between the Department Head and the Assistant Director of Student Affairs as to whether or not they wish to continue with the track. <i>It will be interesting to see if numbers start changing once specific students are targeted.</i></p> | | | | | | | | | | | | | |
| <p>PO #3: Prepare students for field and office leadership.</p> | <p>Student Survey of graduating seniors through use of a Likert scale (strongly agree to strongly disagree) to indicate whether they feel that the BC program prepared them for field and office leadership.</p> | <p>80% of students will indicate that they agree that the program has prepared them for field and office leadership.</p> | <p>Target: Met 80% of students surveyed agreed that BC had prepared them for field leadership. 89% of students surveyed agreed that BC had prepared them for office leadership.</p> | <p>The department did break this Program Outcome into two separate questions on the survey to determine which area they feel they are the best prepared.</p> <table border="1" data-bbox="1136 1109 1486 1243"> <thead> <tr> <th></th> <th>2017/18</th> <th>2018/19</th> <th></th> </tr> </thead> <tbody> <tr> <td>Field</td> <td>89%</td> <td>80%</td> <td>-9%</td> </tr> <tr> <td>Office</td> <td>96%</td> <td>89%</td> <td>-7%</td> </tr> </tbody> </table> <p>Students feel better prepared for office than field leadership. And while the target was met, there was a slight downward trend in both.</p> | | 2017/18 | 2018/19 | | Field | 89% | 80% | -9% | Office | 96% | 89% | -7% | <p>Continue to monitor this within the exit surveys.</p> | |
| | 2017/18 | 2018/19 | | | | | | | | | | | | | | | | |
| Field | 89% | 80% | -9% | | | | | | | | | | | | | | | |
| Office | 96% | 89% | -7% | | | | | | | | | | | | | | | |

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General Question:

Please **answer at least one** of the following questions:

- Is there any additional information not included in your assessment plan that you would like to share that describes efforts you have made to improve student learning, program quality, and/or the student experience?
- What have you learned about your program or your students as a result of engaging in the assessment process?
- What external factors are driving or informing your assessment practices?

Is there any additional information not included in your assessment plan that you would like to share that describes efforts you have made to improve student learning, program quality, and/or the student experience?

The BC Curriculum Committee did an extensive top-down evaluation of the BC curriculum. As the result of this review, actions approved through governance include modifications in terms of hours, content, or contact hours to 7 existing BC courses. This was determined through extensive tracking of safety across the curriculum and estimating across the curriculum as well as tracking contact hours for the integrated studio courses. In addition, 3 new courses were developed to create a new Residential Construction track and the first course will be available to students for the Fall 19 term. This will be the 5th track (concentration) available to students within the BC major thus enhancing the student experience.

Will this new concentration track change the targets for the program outcome related to this area?

2019-2020 Assessment Reporting: Program Summary – BS BC

Degree Program: Bachelor of Science in Building Construction (BS BC)

Department Chair: Dr. Georg Reichard (reichard@vt.edu)

Point of Contact Regarding Assessment (if different than Chair): Renée Ryan (renee.ryan@vt.edu)

Program Mission Statement: The mission of the BS Building Construction Program is to partner with industry in the co-evolution of our curriculum to meet further demands and needs of construction while remaining as current as feasible in technology, processes, and delivery methods.

Background: This mission statement was iteratively developed during faculty meetings and vetted through the department’s Industry Futures Committee. This committee is comprised of industry leaders (e.g. CEOs, owners, presidents) who represent local, regional, national and international design, construction and engineering companies. The underlying principle of the mission statement is agility because the program must reflect and respond to the dynamic nature of the construction industry. As the industry changes, we expect the program to change accordingly such that graduates are prepared to make substantive contributions to the industry of today and the future, not the industry of yesterday. Through our strong partnerships with industry (e.g. during bi-annual meetings of the Industry Affiliates Board), the mission statement has changed over time to reflect emergent needs.

Overall Comments: Feedback is provided below in green to help the program move forward with its assessment process.

- While it is terrific that the program has a direct measure and an indirect measure for each of its student learning outcomes, the program should review its direct measures to make sure that only the specific student learning outcome of interest is being assessed. If an assignment or exam addresses multiple student learning outcomes, only those aspects of the assignment (or questions on the exam) that address the specific student learning outcome should be measured and reported in Table 1 below. For assignments utilizing a rubric, please provide more information on the rating scale used.
- In regards to the Graduating Senior Exit Interview, it looks like the response scale was changed from a 5-point scale to a 2-point scale in 2019-2020. We recommend the program move back to a 5-point scale on this indirect measure since using a scale with a greater number of response options will provide the program with more specific information to inform decision-making and improvement.

Table 1: Student Learning Outcomes

As a reminder, each program should have a total of 5 to 8 student learning outcomes, and be **measuring at least 2 to 3** each year. All student learning outcomes should be measured at least twice in a 5-year time period.

| SLO Process | | | | SLO Use of Results | | |
|--|--|---|---|---|---|--|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning |
| (SLOs) Please include <u>all of your SLOs</u> , even if they were not measured this year. | Please include a measure <u>for each SLO</u> , even if the outcome was not measured this year. | Please include a target <u>for each SLO</u> , even if the outcome was not measured this year. | Please include findings <u>for each SLO</u> measured this year. Did you meet your target(s)? | Please include comments on your findings <u>for each SLO</u> measured this year. What do these findings mean to your program? When do you plan to | An action plan should be included for all SLOs with <u>unmet targets OR at least one SLO</u> each year, even if all | What action plans have been implemented for this outcome in the past? How have those changes affected student learning and/or program quality? |

| SLO Process | | | | SLO Use of Results | | |
|---|--|---|---|---|---|--|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning |
| | | | | <p>measure the outcome again? Are you considering making changes to your assessment plan based on these findings? (Changes for improving student learning on an outcome should be included in the Action Planning column.)</p> | <p>targets were met.</p> | |
| <p>SLO #1: Understand the basic principles of structural behavior.</p> | <p>Direct Measure: BC 2214 Quiz</p> <p>This is a very focused course and the final exam focuses specifically on the understanding and application of Statics Truss Analysis and Deforms Stress and Strain Determination, all of which are core principles of structural behavior.</p> <p>Is the measure here a quiz or the final exam? This is confusing. Please clarify your measure for SLO #1 in next year's report.</p> <p>An overall final exam grade is only a direct measure of SLO #1 if every question on the exam addresses SLO #1 and no other learning</p> | <p>80% of the students will score 80% or higher on the final exam.</p> | <p>Final Exam results are as follows: Max 100 Avg 78 Min 24 St Dev 1.9</p> <p>What percentage of students scored 80% or higher on the exam? The results presented above do not include this information. If the target is expressed as a percentage, then the findings should also be presented as a percentage, not an average.</p> <p>How many students were assessed?</p> <p>For each set of findings, please include whether or not the target was met in the Findings column.</p> | <p>In the first attempt, students revealed a disconnect in being able to apply critical-thinking skills to work a problem in reverse. The second attempt revealed tremendous improvement, but the ability to work a problem from a different perspective is below an acceptable level. Are the findings shared in the Findings column from the first attempt or the second attempt? This also needs to be clarified. Is the measure for SLO #1 a quiz or the final exam?</p> <p>Overall, those who attempted Quiz 4 twice, increased their score by an average of 15%, showing that repetition is important.</p> | <p>Target not met.</p> <p><u>Action Plan:</u></p> <p>The course will be restructured to accommodate more resources (lectures, examples, problems) and more time to the implementation of these concepts in BC 2214.</p> | <p>The implementation of the plan will attempt to address this shortcoming in the 2020-2021 academic year.</p> <p>This column is for comments on previous action plans that have been implemented.</p> |

| SLO Process | | | | SLO Use of Results | | |
|--|--|--|--|--|---|-----------------------------|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning |
| | areas. | | | | | |
| | <p>Indirect Measure: Graduating Senior Exit Interview A question on the exit survey pertaining to the confidence in the program to understand the basic principles of structural behavior. All questions are on a 2-point scale (agree or disagree.)</p> <p>Last year, the exit survey utilized a 5-point scale rather than a 2-point scale. Using a scale with a greater number of response options provides the program with more specific information to inform decision-making and improvement.</p> | 80% of students surveyed will agree that the BC program prepared them to understand the basic principles of structural behavior. | Target met. 55 of the 61 students surveyed (93%) in their exit survey agreed that they understood the basic principles of structural behavior. | | Target Met. | |
| SLO #2: Create effective oral presentations appropriate to the construction discipline | <p>Direct Measure: Formal presentation in BC 2104.</p> <p>In BC 2104, students are required to give a formal presentation in front of instructor and classmates on a preassigned topic. The</p> | Oral presentation targets: 80% of the students will score 80% or higher on the assignment. Rubric items pertain to | Target met. 100% of the class scored 80 or above. Out of 57 students, 4 students scored 80-87%, 27 students scored 87-93%, 21 students scored 93-99%, and 5 students scored 100%. | The students did very well considering that part of the class did in-class presentations prior to spring break and the remainder of the class did virtual recordings or live presentations synchronously after spring break. | Target Met. No action plan needed. | |

| SLO Process | | | | SLO Use of Results | | | | |
|---|--|---|---|--|--|---|--|--|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning | | |
| | <p>presentation will be rated with a rubric designed to evaluate the student’s ability to communicate effectively in an oral presentation. The instructor provides the final rating of the student.</p> <p>What is the rating scale for this rubric?</p> | <p>organization, presentation format / style, use of communication graphics, mechanics, and timing.</p> <p>Information on the rubric should be presented in the Assessment Measures Column.</p> | <p>In addition to the overall score, it would be helpful for the program to look at student performance on each of the different rubric items. Are there some areas where students scored lower than other areas? If so, this could inform the program’s improvement efforts.</p> | | | | | |
| | <p>Indirect Measure: Graduating Senior Exit Survey</p> <p>A question on the exit survey pertaining to the confidence in the program preparation to create effective oral presentations appropriate to the construction discipline.</p> <p>All questions are on a 2-point scale (agree or disagree.)</p> <p>See comments above for SLO #1.</p> | <p>80% of students surveyed will agree that the BC program prepared them to create effective oral presentations appropriate to the construction discipline.</p> | <p>Target met.</p> <p>100% of the students surveyed agreed that they felt confident in their ability to create effective oral presentations appropriate to the construction discipline.</p> | <p>Building Construction students do a lot of presentations for their proposals throughout their 4 years of classes. We routinely have industry relay this to us, especially during their senior capstone presentations.</p> | <p>Target Met.</p> <p>No action plan needed.</p> | | | |
| <p>SLO #3: Create a construction</p> | <p>Direct Measure: BC 2024 Safety Plan Assignment</p> | <p>80% of students will receive a grade of 80% or</p> | <table border="1"> <tr> <td>Avg Score</td> <td>92</td> </tr> </table> | Avg Score | 92 | <p>The success of this safety assignment within BC 2024 is a contributing</p> | <p>Target Met – No action plan needed.</p> | |
| Avg Score | 92 | | | | | | | |

| SLO Process | | | | SLO Use of Results | | | | | | | | |
|---------------------------|--|---|---|----------------------|-------------------------------------|-----------------------------|---|-------------------|--|--|--|--|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning | | | | | | |
| safety plan. | <p>Elements evaluated within the rubric for this assignment include sequence of basic tasks, hazard identification, recommended action plan and hierarchy of controls.</p> <p>What is the rating scale for this rubric? Are any other learning areas evaluated in this assignment (e.g., writing ability, presentation of tables)? An overall assignment grade is only a direct measure of a student learning outcome if every aspect of the assignment addresses the specific student learning outcome and no other learning areas.</p> | higher on a construction safety plan assignment. | <table border="1"> <tr> <td>High score</td> <td>100</td> </tr> <tr> <td>Low Score</td> <td>0</td> </tr> <tr> <td colspan="2">Target Met 92%</td> </tr> </table> <p>In addition to the overall score, it would be helpful for the program to look at student performance on each of the different rubric items. Are there some areas where students scored lower than other areas? If so, this could inform the program's improvement efforts.</p> <p>How many students were assessed?</p> | High score | 100 | Low Score | 0 | Target Met 92% | | factor to the survey results on the indirect measurement for this SLO. | | |
| High score | 100 | | | | | | | | | | | |
| Low Score | 0 | | | | | | | | | | | |
| Target Met 92% | | | | | | | | | | | | |
| | <p>Indirect Measure Graduating Senior Exit Survey A question on the exit survey pertaining to the confidence in the program preparation to create a construction safety plan. All questions are on a 2-point (agree or</p> | 80% of students surveyed will agree that the BC program prepared them to create a construction safety plan. | <p>97% agreed that the program prepared them to create a construction project safety plan.</p> <p>For each set of findings, please include whether or not the target was met in the Findings column.</p> | | Target Met – No action plan needed. | | | | | | | |

| SLO Process | | | | SLO Use of Results | | | | | | | | |
|---|---|--|--|----------------------|--------------------|-----------------------------|-----|-----------|---|---|--|---|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning | | | | | | |
| | disagree). See comments above for SLO #1. | | | | | | | | | | | |
| <p>SLO #4: Analyze professional decisions based on ethical principles.</p> | <p>Direct Measure: BC 2104 Individual Ethical Case Study</p> <p>Case study is graded with a rubric to determine how well they applied ethical principles to the given questions. Also included is the depth of content within the questions and sources used to justify their responses.</p> <p>See comments above for SLO #3.</p> | <p>80% of students will receive a score of 80% or higher on an individual case study assignment provided by industry of a real-life ethical situation experienced.</p> | <table border="1" data-bbox="919 365 1108 597"> <tr> <td>Avg Score</td> <td>75</td> </tr> <tr> <td>High Score</td> <td>100</td> </tr> <tr> <td>Low Score</td> <td>0</td> </tr> </table> <p>See comments above for SLO #3.</p> <p>What percentage of students scored 80% or higher on the assignment? If the target is expressed as a percentage, then the findings should also be presented as a percentage, not an average.</p> <p>For each set of findings, please include whether or not the target was met in the Findings column.</p> <p>How many students were assessed?</p> | Avg Score | 75 | High Score | 100 | Low Score | 0 | <p>Because of COVID, this spring we did not have our industry lectures for a face-to-face presentation on ethical reasoning within the construction industry.</p> <p>Also missing this spring, was a team based case study which is usually done before the individual based assignment.</p> <p>Thank you for including this information.</p> | <p>Target Not Met.</p> <p><u>Action Plan:</u></p> <p>For FA20/SP 21: In the event that this course must go online then the inclusion of another module or assignment before the individual assignment would be needed.</p> | <p>This action plan really depends on how the pandemic will impact instruction in the coming year.</p> <p>This is great information that should be moved to the Action Planning column. The Comments on Action Planning column is for the program to comment on previous action plans that have been implemented.</p> |
| Avg Score | 75 | | | | | | | | | | | |
| High Score | 100 | | | | | | | | | | | |
| Low Score | 0 | | | | | | | | | | | |
| | <p>Indirect Measure: Graduating Senior Exit Survey</p> | <p>80% of students surveyed will agree that the BC</p> | <p>97% of students surveyed in their exit survey agreed that they</p> | | <p>Target Met.</p> | | | | | | | |

| SLO Process | | | | SLO Use of Results | | | | | | | | |
|---|---|---|---|----------------------|-----------------|-----------------------------|-----|-----------|---|--|-------------------|--|
| Student Learning Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning | | | | | | |
| | <p>A question on the exit survey pertaining to the confidence in the program preparing them to analyze professional decisions based on ethical principles. All questions are on a 2-point scale (agree or disagree.)</p> <p>See comments above for SLO #1.</p> | <p>program prepared them to analyze professional decisions based on ethical principles.</p> | <p>were well prepared to analyze professional decisions based on ethical principles.</p> <p>For each set of findings, please include whether or not the target was met in the Findings column.</p> | | | | | | | | | |
| <p>SLO #5: Create construction project cost estimates.</p> | <p>Direct Measure: BC 4444 Assemblies Assignment</p> <p>This assignment has two required deliverables to generate an estimate 1) for the building superstructure; 2) estimating the cost for floor construction and roof construction.</p> <p>This assignment was graded by a rubric in which design, loads, and then cost estimates were evaluated.</p> <p>See comments above for SLO #3.</p> | <p>80% of students will receive a score of 80% or higher on an Assemblies Estimating Standard Assignment.</p> | <table border="1"> <tr> <td>Avg Score</td> <td>88</td> </tr> <tr> <td>High Score</td> <td>100</td> </tr> <tr> <td>Low Score</td> <td>0</td> </tr> </table> <p>See comments above for SLO #3.</p> <p>What percentage of students scored 80% or higher on the assignment? If the target is expressed as a percentage, then the findings should also be presented as a percentage, not an average.</p> | Avg Score | 88 | High Score | 100 | Low Score | 0 | | <p>Target Met</p> | |
| Avg Score | 88 | | | | | | | | | | | |
| High Score | 100 | | | | | | | | | | | |
| Low Score | 0 | | | | | | | | | | | |

| <i>SLO Process</i> | | | | <i>SLO Use of Results</i> | | |
|----------------------------------|--|---|--|-----------------------------|------------------------|------------------------------------|
| <i>Student Learning Outcomes</i> | <i>Assessment Measures</i> | <i>Targets</i> | <i>2019-2020 AY Findings</i> | <i>Comments on Findings</i> | <i>Action Planning</i> | <i>Comments on Action Planning</i> |
| | | | <p>For each set of findings, please include whether or not the target was met in the Findings column.</p> <p>How many students were assessed?</p> | | | |
| | <p>Indirect Measure</p> <p>Graduating Senior Exit Survey</p> <p>A question on the exit survey pertaining to the confidence in the program preparation to create a construction project cost estimate. All questions are on a 2-point scale (agree or disagree.)</p> <p>See comments above for SLO #1.</p> | <p>80% of students surveyed will agree or that the BC program prepared them to create a construction project cost estimate.</p> | <p>90% of students surveyed agree that the BC program prepared them to create a construction project cost estimate</p> <p>For each set of findings, please include whether or not the target was met in the Findings column.</p> | | <p>Target Met</p> | |

Table 2: Program Outcomes

As a reminder, each program should have a total of 2 to 3 program outcomes, and be **measuring at least 1 to 2** each year. All program outcomes should be measured at least twice in a 5-year time period.

| PO Process & Use of Results | | | | | | |
|---|--|---|---|---|--|---|
| Program Outcomes <i>Please include <u>all of your POs</u>, even if they were not measured this year.</i> | Assessment Measures <i>Please include a measure <u>for each PO</u>, even if the outcome was not measured this year.</i> | Targets <i>Please include a target <u>for each PO</u>, even if the outcome was not measured this year.</i> | 2019-2020 AY Findings <i>Please include findings <u>for each PO</u> measured this year. Did you meet your target(s)?</i> | Comments on Findings <i>Please include comments on your findings <u>for each PO</u> measured this year. What do these findings mean to your program? When do you plan to measure the outcome again? Are you considering making changes to your assessment plan based on these findings? (Changes for improving program quality and/or the student experience should be included in the Action Planning column.)</i> | Action Planning <i>Is the program planning any changes or other improvements based on these findings? An action plan should be included <u>for all POs with unmet targets</u>.</i> | Comments on Action Planning <i>What action plans have been implemented for this outcome in the past? How have those changes affected the student experience and/or program quality?</i> |
| <p>PO #1: Student employment in the construction industry by graduation.</p> <p><i>This updated PO is a great way to incorporate feedback from the prior assessment cycle.</i></p> | <p>Department Graduating Senior Exit Survey in which students are specifically asked whether they have found employment, still looking, attending graduate school, or service in the military. Students also list number of job offers, salary range, location and name of firm. This survey is sent out prior to the exit interview scheduled during exam week and before graduation.</p> | <p>90% of students will report having found relevant employment by graduation.</p> <p>(the reported percentage excludes students who continue their studies in graduate school or will serve in the military) <i>Would it be helpful for the program to track students in these categories as well?</i></p> | <p>Target Met.</p> <p><i>Please include specific findings in this column.</i></p> | <p>The senior exit survey was sent out to students on April 29, 2020. 92% of the graduating class indicated that they had received job offers before graduating. Of those, 66% received 2 or more job offers. 2 students indicated that they were currently choosing between offers at the time of the survey. Ordinarily, an in-face graduating student interview would follow the written survey, but because of COVID, the in-person interview did not take place.</p> | <p>No action needed.</p> | |

PO Process & Use of Results

| Program Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning | | | | | | | | | | | | |
|--|--|--|---|-----------------------------|------------------------|------------------------------------|-----|----------------|-----|--------------------------|-----|--------------------------|-----|--------------------|----|---|---|---|
| <p>PO #2: Maintain adequate enrollment in areas of tracks (concentrations).</p> | <p>Annual student survey of each student's choice of specialization in which they must indicate year in program and track selection.</p> <p>The Department utilizes this data to track enrollment across tracks.</p> | <p>Concentration areas (tracks) will maintain enrollment of at least 15% of the total number of students enrolled in the track options.</p> <p>Tracks without the minimum of 15% enrollment will be evaluated for content and need of continuation within the major.</p> <p>It is important to note that track selections are typically not made until a student's 3rd-4th semester of BC.</p> | <p>Target: Not Met</p> <p>Survey findings:</p> <table border="1" data-bbox="877 362 1152 751"> <tr> <td>Structural Design</td> <td>3%</td> </tr> <tr> <td>Sustainable Performance</td> <td>25%</td> </tr> <tr> <td>Virtual Design</td> <td>13%</td> </tr> <tr> <td>Residential Construction</td> <td>19%</td> </tr> <tr> <td>Real Estate Double Major</td> <td>39%</td> </tr> <tr> <td>Other Double Major</td> <td>1%</td> </tr> </table> | Structural Design | 3% | Sustainable Performance | 25% | Virtual Design | 13% | Residential Construction | 19% | Real Estate Double Major | 39% | Other Double Major | 1% | <p>The Structural track involves higher math as a prerequisite for 3 courses in the College of Engineering. The challenging coursework makes this track less desirable when students choose their track selection.</p> <p>In addition, the Construction Engineering Management (CEM) Degree offered within our school fills the need for this track, and thus further reduces incentives for BC students</p> <p>With the inclusion of the new Residential Construction track, the numbers have gone down in all other tracks except for the Real Estate double major, which remains the same.</p> <p>The structural track, which we had been watching because of its continued decline further decreased from 9% to 3%.</p> | <p>2019/20 Action Plan:</p> <p>A decision needs to be made between the Department Head and the Assistant Director of Student Affairs as to whether or not to continue with the Structural Design track.</p> <p>An investigation will be launched to identify possible issues in the Virtual Design track.</p> | <p>A department decision will likely dissolve this specific track since the Construction Engineering and Management degree is another option for the engineering-minded students within MLSOC.</p> <p>The department will investigate trajectories (from past enrollments) and perceptions from student evaluations to identify issues for the lower number of students selecting the Virtual Design track.</p> <p><i>This is great information that should be moved to the Action Planning column. The Comments on Action Planning column is for the program to comment on previous action plans that have been implemented.</i></p> |
| Structural Design | 3% | | | | | | | | | | | | | | | | | |
| Sustainable Performance | 25% | | | | | | | | | | | | | | | | | |
| Virtual Design | 13% | | | | | | | | | | | | | | | | | |
| Residential Construction | 19% | | | | | | | | | | | | | | | | | |
| Real Estate Double Major | 39% | | | | | | | | | | | | | | | | | |
| Other Double Major | 1% | | | | | | | | | | | | | | | | | |

PO Process & Use of Results

| Program Outcomes | Assessment Measures | Targets | 2019-2020 AY Findings | Comments on Findings | Action Planning | Comments on Action Planning | | | | | | | | | | | | |
|--|---|--|---|--|------------------------|------------------------------------|--------|-----------|-----|-----|-----------|-----|-----|-----------|-----|-----|--------------------------|--|
| <p>PO #3: Prepare students for field and office leadership.</p> | <p>Student Survey of graduating seniors through use of a 2-point scale (agree or disagree) to indicate whether they feel that the BC program prepared them for field and office leadership.</p> <p>See comments above for SLO #1.</p> | <p>80% of students will indicate that they agree that the program has prepared them for field and office leadership.</p> | <p>Target: Met</p> <p>92% of students surveyed agreed that BC had prepared them for field leadership.</p> <p>97% of students surveyed agreed that BC had prepared them for office leadership.</p> | <p>The department did break this Program Outcome into two separate questions on the survey to determine which area they feel they are the best prepared.</p> <table border="1"> <thead> <tr> <th></th> <th>Field</th> <th>Office</th> </tr> </thead> <tbody> <tr> <td>2017/2018</td> <td>89%</td> <td>96%</td> </tr> <tr> <td>2018/2019</td> <td>80%</td> <td>89%</td> </tr> <tr> <td>2019/2020</td> <td>92%</td> <td>97%</td> </tr> </tbody> </table> <p>Students feel slightly better prepared for office than for field leadership. Compared to last year, there was a moderate upward trend in both.</p> | | Field | Office | 2017/2018 | 89% | 96% | 2018/2019 | 80% | 89% | 2019/2020 | 92% | 97% | <p>No action needed.</p> | |
| | Field | Office | | | | | | | | | | | | | | | | |
| 2017/2018 | 89% | 96% | | | | | | | | | | | | | | | | |
| 2018/2019 | 80% | 89% | | | | | | | | | | | | | | | | |
| 2019/2020 | 92% | 97% | | | | | | | | | | | | | | | | |

General Question:

Please **answer at least one** of the following questions:

- Is there any additional information not included in your assessment plan that you would like to share that describes efforts you have made to improve student learning, program quality, and/or the student experience?
- What have you learned about your program or your students as a result of engaging in the assessment process?
- What external factors are driving or informing your assessment practices?

Is there any additional information not included in your assessment plan that you would like to share that describes efforts you have made to improve student learning, program quality, and/or the student experience?

The BC Curriculum Committee did an extensive top-down evaluation of the BC curriculum. As the result of this review, actions approved through governance include modifications in terms of hours, content, or contact hours to 7 existing BC courses. This was determined through extensive tracking of safety across the curriculum and estimating across the curriculum as well as tracking contact hours for the integrated studio courses. In addition, 3 new courses were developed to create a new Residential Construction track and the first course was available to students during the Fall 19 term. The popularity of this new track (concentration) will most likely lead to the abandoning of the structural track, which is covered by other programs (CEM). This change is a direct result of our mission (and commitment) to prepare students for the emerging fields in our industry, thus enhancing the student experience and meeting industry needs in the process.

Due to the past 2 years of more integrated safety content across the program, we have seen a substantial upward trend (+16%) of the students' confidence in their ability to create a safety plan. This goes beyond merely creating a safety plan as awareness of safety has also increased and this is something to be proud of as our students graduate into a high-risk industry. The 5th track of Residential Construction & Design saw 19% of students enrolled in track selections choosing this option. Students seem pleased with the optional selection and we have received good feedback from these new courses.

What external factors are driving or informing your assessment practices?

The Department of Building Constructions maintains strong relationships with the industry we serve.

- We have one of the largest Industry Advisory Boards in our college and discuss emerging industry needs and curriculum development at least twice a year.
- We also have industry review panels in capstone courses, which we use as another feedback mechanism for the quality of our seniors and soon-to-be-graduates.
- Lastly, twice a year we host one of the largest program-specific career fairs with 150+ companies attending, for whom we conduct effectiveness reviews and surveys. Some of the survey questions can also be used as feedback mechanisms for the quality and direction of our curriculum options.

Thank you for providing this additional information.

2020-2021 Assessment Reporting Template for Graduate and Undergraduate Programs

There are four sections to the Annual Assessment Reporting Template: Program Summary Information, Student Learning Outcomes (Table 1), Program Outcomes (Table 2), and General Questions. **Please follow the directions at the beginning of each report section and provide the information requested.**

Reports are due June 30, 2021. If you need assistance, please do not hesitate to contact Bethany Bodo, Director, Institutional Effectiveness, Office of Analytics and Institutional Effectiveness, at bbodo@vt.edu.

Program Summary Information

Directions: Please provide the name and academic level of the degree program, the department chair, the assessment point of contact, and the program mission statement.

Degree Program: Bachelor of Science in Building Construction (BS BC)

Department Chair: Dr. Georg Reichard (reichard@vt.edu)

Point of Contact Regarding Assessment (if different than Chair): Renée Ryan (renee.ryan@vt.edu)

Program Mission Statement: The mission of the BS Building Construction Program is to partner with industry in the co-evolution of our curriculum to meet future demands and needs of construction while remaining as current as feasible in technology, processes, and delivery methods.

Background: This mission statement was iteratively developed during faculty meetings and vetted through the department's Industry Futures Committee. This committee is composed of industry leaders (e.g. CEOs, owners, presidents) who represent local, regional, national and international design, construction and engineering companies. The underlying principle of the mission statement is agility because the program must reflect and respond to the dynamic nature of the construction industry. As the industry changes, we expect the program to change accordingly such that graduates are prepared to make substantive contributions to the industry of today and the future, not the industry of yesterday. Through our strong partnerships with industry (e.g. during bi-annual meetings of the Industry Affiliates Board), the mission statement has changed over time to reflect emergent needs.

General Comments – Thank you for incorporating feedback from your 2019-2020 report into your 2020-2021 report and making multiple revisions to your assessment plan. Feedback is provided below in green to help the program continue to move forward with its assessment process. Which assignments are group assignments and which are individual assignments? Using individual assignments is generally preferable to using group assignments since the strong performance of one student can mask the poor performance of other students in a group. Moving forward, is there a way to utilize more individual assignments or to assess students' individual contributions to the group projects?

Table 1: Student Learning Outcomes (SLOs)

SLO Process Column Directions (all sections should be completed for all of the program's SLOs):

- Each program should have a **total of 5 to 8 SLOs**, unless a discipline-specific accrediting body requires more.
- Programs should provide **all of their SLOs with corresponding measures and targets**, even if specific outcomes were not measured during the current cycle.
- Every SLO should have at least one **direct measure**. **Direct measures** are those in which faculty members or other reviewers directly evaluate student work that demonstrates the specific knowledge, skill, ability, or competency described in a student learning outcome. These should not be overall project grades or test scores. Rather, if a project is used, students' ability on only that specific student learning outcome of interest should be evaluated. In contrast, indirect measures of student learning outcomes typically ask students to reflect on their learning or abilities but do not provide direct evidence of the learning.
- Programs should be **measuring 2 to 3 of their student learning outcomes** every year.
- In the "2020-2021 AY Findings" column, programs should:
 - For all SLOs, indicate when this SLO was last assessed and when it will be assessed next.
 - For measured SLOs, also include findings and whether or not the target was met.

SLO Use of Results Column Directions (all sections should be completed for SLOs measured by the program during the current year):

- **Comments on Findings:** Please reflect on the findings. What do these mean to your program and student learning in this area? Does the program plan to change its assessment strategy for this SLO?
**Please note: Action plans for improving student learning in this area should be presented in the next column.
- **Action Planning:** The primary goal of assessment is for programs to continuously make improvements to enhance student learning. Therefore:
 - Programs should provide an action plan for every unmet SLO: What changes is the program planning to make to improve student learning in this area?
 - If all SLOs were met: The program should determine if there are any SLOs that would benefit from increased attention and indicate what the program plans to do to further support student learning in this area.
- **Comments on Action Planning:** The program should provide comments on previously implemented action plans to enhance student learning for this specific SLO.
- Programs should assess **each of their outcomes at least twice during a five-year period**.

| SLO Process <i>Complete all columns in this section for each of the program's SLOs.</i> | | | | SLO Use of Results <i>Complete columns for SLOs measured during the current cycle.</i> | | |
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| Student Learning Outcomes <i>Include all SLOs.</i> | Assessment Measures <i>Provide a measure for each SLO.</i> | Targets <i>Based on the measure, include a target for each SLO.</i> | 2020-2021 AY Findings <i>For all outcomes include: When was this SLO last assessed and when will it be assessed next? For measured outcomes include: Specific findings and whether or not the target was met.</i> | Comments on Findings <i>Include comments on findings for each SLO measured. What do these findings mean to your program and student learning in this area? Does the program plan to change its assessment strategy for this SLO?</i> | Action Planning <i>An action plan should be included for all SLOs with unmet targets OR at least one SLO each year, even if all targets were met.</i> | Comments on Action Planning <i>What action plans have been implemented for this outcome in the past? How have those changes affected student learning and/or program quality?</i> |
| SLO #1: Create a construction safety plan | BC 2024 – Safety Plan Assignment Instructor | 90% of students will earn 70% or higher on the assignment. | Target Not Met 88% of the 25 students who completed the assignment scored 70% or higher. | The class average score was down from 92% to 84% from the 2019/20 assessment cycle. | Specific emphasis by the instructor on awareness for the criticality of this assignment as a learning | Safety is one of the top priorities in the construction industry, which is why we have increased the target percentage while lowering the grade |

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| | <p>evaluation within the rubric for this assignment include sequence of basic tasks, hazard identification, recommended action plan, and hierarchy of controls. This is a 5 point rubric with 4 points allotted to content and process of the above and 1 point allotted to quality and organization.</p> <p>An overall assignment grade is only a direct measure of a student learning outcome if every aspect of the assignment addresses the specific student learning outcome and no other learning areas.</p> <p>Is this a group assignment or an individual assignment?</p> | <p>How does the overall score (e.g., 70%) on the assignment relate to the rubric described in the Assessment Measures column? Would this mean that students need to score at least 3.5 points on the rubric items related to this SLO? Please clarify this in next year's report.</p> | <p>1 student scored 75-80%, 4 students scored 85-90%, 4 students scored 90-95%, 18 students scored 95-100%.</p> <p>The number of students highlighted in yellow is 27. How many students were assessed for SLO #1 – 25 or 27?</p> | | <p>objective. We will support the emphasis of this assignment in preceding courses (BC 1214 & 1224) by placing “hooks” that can be built upon by the current instructor of BC 2024, where we measure the outcome.</p> | <p>percentage. It is paramount that most (all) students earn a passing grade on this assignment - independent of other assignments and grades in this course. We consider this SLO as a foundation for anything we teach and thus want to have this objective met early in the curriculum. This information would be better reported in the Comments on Findings column.</p> <p>We will work with first year instructors on specific examples, where they can point to and prep students for the assignment in the second year, where they will have to demonstrate the mastery of this objective. This information would be better reported in the Action Planning column since this describes actions the program is going to take/is in the process of implementing.</p> <p>The Comments on Action Planning column is for comments on previous action plans that have already been implemented.</p> |
| <p>SLO #2: Analyze professional</p> | <p>BC 2104 - Ethics Case Study</p> | <p>90% of students will earn 70% or higher on</p> | <p>Target Met. 92% of the 36 students who</p> | <p>This is a substantial increase from the 2019/20 assessment cycle in which 75% of</p> | <p>Target met. No action plan is needed.</p> | <p>The action plan implemented included an additional module plus a</p> |

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| <p>decisions based on ethical principles.</p> | <p>Assignment</p> <p>Instructor evaluation within the rubric include depth of thought (1 pt), ethical approaches used (.5), and completeness and word count (.5) . This is a 2 point assignment (out of a 100 point class).</p> <p>Is this a group assignment or an individual assignment?</p> | <p>the assignment.</p> <p>How does the overall score (e.g., 70%) on the assignment relate to the rubric described in the Assessment Measures column? Would this mean that students need to score at least 1.4 points on the rubric items related to this SLO? Please clarify this in next year's report.</p> | <p>completed the assignment scored 70% or higher.</p> <p>1 student scored 80-85%, 7 students scored 85-90%, 4 students scored 90-95%, and 21 students scored 95-100%.</p> | <p>students who completed the assignment scored 70% or higher. Spring 19 was an anomaly however due to the abrupt shift to online learning over the spring break and the disruption to the ethics unit which included industry speakers who were unable to guest lecture for preparation of assignment.</p> | | <p>recorded lecture by an industry professional that supplied needed information missing from the spring 20 assessment cycle. This improved student scores on this assignment.</p> <p>Thank you for providing this update.</p> |
| <p>SLO #3: Create construction project cost estimates.</p> | <p>BC 2014 - Square Foot (SF) Estimate Assignment</p> <p>Instructor evaluation with a 4 point rubric for correct calculations that must be shown within 4 exercises of the assignment (1 pt for each exercise).</p> <p>Is this a group assignment or an individual assignment?</p> | <p>80% of students will earn 80% or higher on the assignment.</p> <p>How does the overall score (e.g., 80%) on the assignment relate to the rubric described in the Assessment Measures column? Would this mean that students need to score 3.2 points on the rubric items related to this SLO? Please clarify this in next year's report.</p> | <p>Target Met. 98% of 90 students scored 80% or higher.</p> <p>3 students scored 80-85%, 3 students scored 90-95%, and 82 students scored 95-100%.</p> | <p>Comments on findings should be included each time findings are presented.</p> | <p>Target met. No action plan is needed.</p> | |

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| <p>SLO #4: Create construction project schedules.</p> | <p>BC 2024 - Scheduling Assignment</p> <p>Instructor evaluation within the 5 point rubric includes 4 points within the work packages that include site work, foundations, critical path, etc. to show total duration of the project and 1 point for quality and organization.</p> <p>Is this a group assignment or an individual assignment?</p> | <p>80% of students will earn 80% or higher on the assignment.</p> <p>How does the overall score (e.g., 80%) on the assignment relate to the rubric described in the Assessment Measures column? Would this mean that students need to score at least 4.0 points on the rubric items related to this SLO? Please clarify this in next year's report.</p> | <p>Target Met 98% of the 86 students who completed the assignment scored 80% or higher.</p> <p>4 students scored 80-85%, 20 students scored 85-90%, 26 students scored 90-95%, and 34 students scored 95-100%.</p> | <p>Comments on findings should be included each time findings are presented.</p> | <p>Target met. No action plan is needed.</p> | |
| <p>SLO #5: Analyze construction documents for planning management of construction processes.</p> | <p>BC 4064 – Plan and Specification Reading Assignment</p> <p>Instructor evaluation of 5 point rubric.</p> <p>Criteria include listed major divisions in the specs, major design disciplines, missing and duplicate plan sheets.</p> | <p>80% of students will earn 80% or higher on the assignment.</p> <p>How does the overall score (e.g., 80%) on the assignment relate to the rubric described in the Assessment Measures column? Would this mean that students need to score at least 4.0 points on the rubric items related to this SLO? Please clarify this in next</p> | <p>Target met. 83% of 52 students scored 80% or higher.</p> <p>2 students scored 80-85%, 4 students scored 85-90%, 6 students scored 90-95%, 31 students scored 95-100%.</p> | <p>This assignment prepares students for a plan and specification reading quiz in which the average class grade was 91%. The success of the assignment is evident within the higher quiz scores of the class.</p> | <p>Target met.</p> <p>Possible action plan to test for this earlier in the curriculum</p> | <p>Since this learning objective is a critical skill set that could increase performance throughout our integrated lab courses BC 2064/3064/4064, an earlier and/or repeated assessment of this objective will be discussed in our faculty retreat. This information would be better reported in the Action Planning column.</p> |

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| | Is this a group assignment or an individual assignment? | year's report. | | | | |
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Table 2: Program Outcomes (POs)

PO Process Column Directions (all sections should be completed for all of the program's POs):

- Each program should have a **total of 2 to 3 POs**.
- Programs should provide **all of their POs with corresponding measures and targets**, even if not measured during the current cycle.
- Programs should be **measuring 1 to 2 of their POs** every year.
- In the "2020-2021 AY Findings" column, programs should:
 - For all POs, indicate when this PO was last assessed and when it will be assessed next.
 - For measured POs, also include findings and whether or not the target was met.

PO Use of Results Column Directions (all sections should be completed for POs measured by the program during the current year):

- **Comments on Findings:** Please reflect on the findings. What do these findings mean to your program? Does the program plan to change its assessment strategy for this PO?
 ** Please note: Action plans related to the area should be presented in the next column.
- **Action Planning:** Programs should provide an action plan for every unmet PO. Is the program planning any changes or other improvements based on these findings?
- **Comments on Action Planning:** The program should provide comments on previously implemented action plans to enhance the student experience or improve program quality.
- Programs should assess **each of their POs at least twice during a five-year period**.

| PO Process <i>Complete all columns in this section for each of the program's POs.</i> | | | | PO Use of Results <i>Complete columns for POs measured during the current cycle.</i> | | |
|---|---|--|--|--|---|---|
| Program Outcomes (POs) <i>Include all POs.</i> | Assessment Measures <i>Provide a measure for each PO.</i> | Targets <i>Based on the measure, include a target for each PO.</i> | 2020-2021 AY Findings <i>For all outcomes include: When was this PO last assessed and when will it be assessed next?</i> <i>For measured outcomes include: Specific findings and whether or not the target was met.</i> | Comments on Findings <i>Include comments on findings for each PO measured. What do these findings mean to your program? Does the program plan to change its assessment strategy for this PO?</i> | Action Planning <i>An action plan should be included for all POs with unmet targets. Is the program planning any changes or other improvements based on these findings?</i> | Comments on Action Planning <i>What action plans have been implemented for this outcome in the past? How have those changes affected the student experience and/or program quality?</i> |

| <p>PO #1: Student employment in the construction industry by graduation.</p> | <p>Department Graduating Senior Exit Survey in which students are specifically asked whether they have found employment, still looking, attending graduate school, or service in the military. Students also list number of job offers, salary range, location and name of firm. This survey is sent out prior to the exit interview scheduled during exam week and before graduation.</p> | <p>90% of students will report having found relevant employment by graduation, excluding students who continue their studies in graduate school or will serve in the military.</p> | <p>Target Met.</p> <p>This was assessed spring 20 and spring 21 and will be assessed again in spring 22. This is an annual assessment.</p> <p>The senior exit survey was sent out to students on May 5, 2021. 93% of the graduating class indicated that they had received job offers before graduating.</p> <p>Of the 71 students (not including grad school or military) 61 students had accepted offers, 5 were choosing between offers, and 5 were actively seeking employment.</p> | <p>Because the survey is sent out to enable students to fill it out before the crush of final exams and graduation, there are students still looking. We will follow up with those 5 students to determine if they are employed.</p> <p>The percentage of students were similar from spring 20 (92%) to spring 21 (93%). This is interesting to note that even with the loss of student internships during the Covid summer, our students are still being placed. That's terrific!</p> | <p>Target met. No action plan needed.</p> | | | | | | | | | | | | | |
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| <p>PO #2: Maintain adequate enrollment in areas of tracks (concentrations).</p> | <p>Department Graduating Senior Exit Survey in which students are asked to select their completed track.</p> <p>The Department utilizes this data to track enrollment across tracks.</p> | <p>Concentration areas (tracks) will maintain enrollment of at least 15% of the total number of students enrolled in the track options.</p> <p>Tracks without the minimum of 15% enrollment will be evaluated for content and need of continuation within the major.</p> | <p>Target not met.</p> <p>This was assessed spring 20 and spring 21 and will be assessed again in spring 22. This is an annual assessment.</p> <p>Survey Findings</p> <table border="1" data-bbox="908 1146 1376 1456"> <thead> <tr> <th></th> <th>S21</th> <th>S20</th> </tr> </thead> <tbody> <tr> <td>Structural Design</td> <td>5.13%</td> <td>3%</td> </tr> <tr> <td>Sustainable Performance</td> <td>42.31%</td> <td>25%</td> </tr> <tr> <td>Virtual Design/Information</td> <td>16.67%</td> <td>13%</td> </tr> </tbody> </table> | | S21 | S20 | Structural Design | 5.13% | 3% | Sustainable Performance | 42.31% | 25% | Virtual Design/Information | 16.67% | 13% | <p>The Structural track involves higher math as a prerequisite for 3 courses in the College of Engineering. The challenging coursework makes this track less desirable when students choose their track selection. In addition, the Construction Engineering Management (CEM) Degree offered within our school fills the need for this track.</p> <p>We see a substantial decrease in the Real Estate Double Major and a slight decrease in the Residential track which is a fairly new track.</p> <p>We were watching the Virtual</p> | <p>The 2019/20 Action Plan Implemented:</p> <p>A decision needs to be made between the Department Head and the Assistant Director of Student Affairs as to whether or not to continue with the Structural Design track.</p> <p>An investigation will be launched to identify possible issues in the Virtual Design track.</p> | <p>A department decision was made to dissolve the structural design track since the Construction Engineering and Management degree is another option for the engineering-minded students within MLSOC. The 2021/22 Checksheet will no longer include the Structural Design concentration.</p> <p>During the in-face senior exit interviews, the department did investigate student perceptions from the Virtual Design track to identify issues for the lower number of students selecting this track. Student comments included, "I don't</p> |
| | S21 | S20 | | | | | | | | | | | | | | | | |
| Structural Design | 5.13% | 3% | | | | | | | | | | | | | | | | |
| Sustainable Performance | 42.31% | 25% | | | | | | | | | | | | | | | | |
| Virtual Design/Information | 16.67% | 13% | | | | | | | | | | | | | | | | |

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| | | <p>It is important to note that track selections are typically not made until a student's 3rd-4th semester of BC.</p> | <table border="1"> <tr> <td>Systems</td> <td></td> <td></td> </tr> <tr> <td>Residential</td> <td>15.38%</td> <td>19%</td> </tr> <tr> <td>Real Estate/ Double Major</td> <td>20.51%</td> <td>40%</td> </tr> </table> | Systems | | | Residential | 15.38% | 19% | Real Estate/ Double Major | 20.51% | 40% | <p>Design track as part of our action plan and we do note a slight increase in numbers to bring it above the 15% target.</p> | <p>The 2020/21 Action Plan: The department will continue to watch the numbers within the Virtual Design track and meet with the faculty who teach these classes.</p> | <p>feel like I can go into industry and claim to have a good understanding of virtual design even though it was my concentration".</p> <p>A committee was formed in which a track chair was nominated to represent the track on the curriculum committee. The committee decided on a name change from Virtual Design to Information Systems in the Built Environment to better represent the coursework. This was approved on the 2021/22 checksheet.</p> <p>Thank you for providing this update. This is great documentation of the program's continuous improvement efforts.</p> |
| Systems | | | | | | | | | | | | | | | |
| Residential | 15.38% | 19% | | | | | | | | | | | | | |
| Real Estate/ Double Major | 20.51% | 40% | | | | | | | | | | | | | |
| <p>PO #3: Students will participate in experiential learning through participation in an internship or co-op experience.</p> | <p>Department Graduating Senior Exit Survey in which students are asked to indicate the number of internships served.</p> | <p>80% of students will have participated in 2 internships by graduation.</p> | <p>Target Met.</p> <p>This was assessed spring 21 and will be assessed again in spring 22.</p> <p>83% of students surveyed reported 2 or more internships completed.</p> <p>4 students reported 0 internships. 10 students reported 1 internship. 25 students reported 2 internships. 29 students reported 3 internships. 13 students reported 4 internships.</p> | <p>This is important for the department to note. Since we have such a high volume of change of majors, we realize that not every student will begin their freshmen year in the program and can participate in 3-4 internships. But it is important to continue to promote the value and provide opportunities through the MLSOC career fair.</p> | | | | | | | | | | | |

General Questions

Directions: Please answer **at least one** of the following questions.

- Is there any additional information not included in your assessment plan that you would like to share that describes efforts you have made to improve student learning, program quality, and/or the student experience?
- What have you learned about your program or your students as a result of engaging in the assessment process?
- What external factors are driving or informing your assessment practices?

With a change in department leadership, the past SLOs of this assessment have been revised.

While we still consider the objectives of written and oral communication and presentation skills a top priority, many (most) of the respective assignments happen in team environments, which reflects the real-world practice but is harder to evaluate on an individual basis. Which assignments are group assignments and which are individual assignments? Using individual assignments is generally preferable to using group assignments since the strong performance of one student can mask the poor performance of other students in a group. Moving forward, is there a way to utilize more individual assignments or to assess students' individual contributions to the group projects?

Therefore, we have dropped one of our previous SLOs and introduced a new objective (SLO5) focusing on construction documentation. This is another high-priority skill set expected by our industry, where we have heard from faculty that students were not performing too well. However, when we assessed this with metrics pulled in BC 4064, our targets were met. From these results we conclude that the reports must happen at an earlier stage in the curriculum and we will discuss possible earlier check-ins (e.g. in BC 2064/3064) with faculty during our summer retreat.

Thank you for providing this additional information.