

Student Outcomes Assessment and Success Report AY2021-22 Consult with your college dean's office regarding due date and how to submit. Deans will submit reports to the Office of Assessment & Accreditation annually by October 15.

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Part 1a: Summary of Student Learning Outcomes Assessment

NOTE: If data is missing due to COVID-19 transition issues, please describe these issues, their impact on your ability to assess student learning, and what, if anything, will change as a result.

a. What learning outcomes did you assess this past year? If this is a graduate program, identify the Graduate Student Learning Outcome each outcome aligns with.	b. (1) What assignments or activities did you use to determine how well your students attained the outcome? (2) In what course or other required experience did the assessment occur?	c. What were your expectations for student performance?	d. What were the actual data/results?	e. What changes or improvements were made or will be made in response to these assessment results or feedback from previous year's report? Can expand on this in Part 2.
1. A.2.1 Proof – Contradiction	A directive covering proof by contradiction was used. MATH 320	80% Recognition – knows contradiction proof is needed, but may contain errors 50% Execution – no error	Executed: 13 65% Recognized only: 5 25% Unaware: 2 10%	Recognition and execution are above threshold. Focus will be on maintaining this in upcoming cycles.
2. A.3.1 Proof – Contrapositive	A directive covering proof by contrapositive was used. MATH 320	80% Recognition – knows contrapositive proof is needed, but may contain errors 50% Execution – no error	Executed: 14 70% Recognized only: 4 20% Unaware: 2 10%	Recognition and execution are above threshold. Focus will be on maintaining this in upcoming cycles.
3. B.4.1 Computation-Geometry	A directive covering graph transformations was used. MATH 122	80% Recognition – knows graph transformation is needed, but may contain errors 50% Execution – no error	Executed: 10 67% Recognized only: 4 27% Unaware: 1 7%	Recognition and execution are above threshold. Focus will be on maintaining this in upcoming cycles.
4. C.2.1 Application-Problems in Mathematics	A directive covering curve sketching was used. MATH 131	80% Recognition – knows curve sketching is needed, but may contain errors 60% Execution – no error	Executed: 25 40% Recognized only: 25 40% Unaware: 13 21%	Recognition is at threshold, but execution is below. Focus will be on execution in upcoming cycles.
5. C.2.3 Application-Problems in Mathematics	A directive covering R programming writing was used. MATH 252	80% Recognition – writes an R program, but may contain errors 50% Execution – no error	Executed: 7 70% Recognized only: 2 20% Unaware: 1 10%	Recognition and execution are above threshold. Focus will be on maintaining this in upcoming cycles.
6. F.1.1 Career Readiness-Resumes	A directive covering resume writing was used. MATH 494	80% Recognition – resume is submitted	Executed: 3 50% Recognized only: 3 50% Unaware: 0 0%	Recognition and execution are above or at threshold.

		50% Execution – only minor criticisms		Focus will be on maintaining this in upcoming cycles.
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Note: If you would like to report on more than three outcomes, place the cursor in the last cell on the right and hit “tab” to add a new row.

Helpful Hints for Completing this Table

- a. Use your outcomes library as a reference. Note any alignment with professional standards, as applicable.
- b. Each outcome should be assessed by at least one direct measure (project, practica, exam, performance, etc.). If students are required to pass an examination to practice in the field, this exam should be included as one of the measures. At least one of the program’s outcomes must use an indirect measure (exit interview, focus group, survey, etc.). Use your curriculum map to correlate outcomes to courses. Describe or attach any evaluation tools such as rubrics, scales, etc.
- c. Identify the score or rating required to demonstrate proficiency (e.g., Students must attain a score of “3” to be deemed proficient; at least 80% of students in the program will attain this benchmark.)
- d. Note what the aggregate level of proficiency actually was and the number of students included in the cohort or sample (e.g., 85% of the 25 students whose portfolios were reviewed met the established benchmark).

Part 1b: Review of Student Success Data & Activities

Use [Blue Reports](#) to generate the following information (as well as any other information helpful to you). A dashboard has been created in the Chairs view:

- 1) Cohort Sizes – 9 current majors
 - 2) 2) Year-to-Year Retention - Fall 2020 66.67%, Fall 2021 66.67%
 - 3) 3) 5-Year Graduation Rate (undergraduate); Fall 2016 100%, Fall 2017 58.33%
- Average time to completion (graduate)

What worked well in supporting student success this year?

Having the Math Lab return to normalcy was helpful. Faculty maintaining contact with their students, whether it be in person or teleconferencing, also goes a long way to keeping students engaged with the course.

What are the most significant opportunities for improvement upon which to focus in the coming year?

The overall results are strong, so clearly maintaining those results would be optimal. This should be feasible if the same resources are applied as they have been in previous years, in particular contact with the students, directly by faculty or indirectly through the Math Lab. This would include teleconferencing options like Zoom if direct contact is not conducive.

The execution category for MATH 131, which was below threshold, was based on a subject (curve sketching) that can be fairly broad. Standardizing the question may make sense here for future cycles. The program director will discuss at a dept meeting about the feasibility of standardizing this particular topic.

Being able to expand the courses that the Math Lab can provide assistance with is also a significant opportunity, as it would bolster the support for the students and contribute to their success.

Part 2: Continuous Quality Improvement

Reflect on the information shared above regarding student learning, success, and career readiness. In no more than one page, summarize:

- 1) the discoveries assessment and data review have enabled you to make about student learning, success, and career readiness (ex: What specifically do students know and do well—and less well? What evidence can you provide that learning is improving? How might learning, success, and career readiness overlap? What questions do your findings raise?)**

Our dept's new assessment cycle is three years, and this is the last year of the first cycle. The results are strong, and this is across service classes (131) as well as major classes. The other two cycles showed similar but less glowing results. It would be important to follow up on this through future cycles, if there is some effect in the randomly chosen learning outcomes, or if strong results occur in the other years for future cycles.

The MATH 252, 320 and 494 courses have a strong overlap with career readiness tools. Success in these areas would imply success after graduation, as such, extra attention should be placed on the data for these courses. As they were all above threshold, it is important maintain that attention in future cycles.

Questions raised by the findings would be 'Are the strength of the results a random effect?', 'Besides MATH 131, the resulting totals are small samples. Is there a small sample issue in interpreting the results beyond this year?'

- 2) findings-based plans and actions intended to improve student learning and/or success (expansion of Part 1a, box e as needed)**

As some of the courses involved in the assessment rely on the Math Lab, ensuring the funding and the human capital in the Math Lab is part of the plan. Extending the list of courses for which the Math Lab can provide help for has been considered by some faculty, and some partial solutions have been presented. Assessing the feasibility and benefit of each is presently underway.

- 3) what your assessment plan will focus on in the coming year**

This will be the start of the second cycle, so the assessment plan will be to look at the coming year's data and compare with the previous cycle (19-20) and its results. This comparison should be straightforward, as 19-20 only had its tail end affected by the pandemic. In particular, it would be important to identify any areas that were below threshold that continue to be below threshold.

- 4) how this information will be shared with other stakeholders**

The results of the assessment will be shared via e-mail with course coordinators and the Math Group, who will distribute the data to members as they see fit. At their next available meeting, the committee and/or coordinators will discuss the results, as well as interpret why they are happening.

Student Outcomes Assessment & Success Report Evaluation AY 21-22

Program: BS Mathematics

Evaluation: Mature

The purpose of SOAS Report evaluation is to promote high quality academic program assessment that results in relevant, useful, and accurate data about student learning outcome achievement that faculty can use in planning for and monitoring efforts toward continuous improvement. Faculty are encouraged to incorporate feedback they find useful into assessment practices, and resources are available to support assessment development.

Evaluation Key: Exemplary=Meets all standards, exceeds some; Mature=Meets all/most standards, no serious concerns; Developing=Meets some standards, multiple recommendations for improvement; Undeveloped=Meets few/no standards, serious concerns noted; Cannot Evaluate=Missing information prevents evaluation

Component of Practice	Areas of Exemplary Practice	Standards of Practice Highlighted practices were clear in the SOASR	Recommendations for Improvement (serious concerns highlighted)	Evaluation Relative to Standards
<p>Learning Outcomes Strong learning outcomes use language that focuses on what students will achieve and can be measured to demonstrate achievement.</p>		<p>At least one outcome is assessed this cycle</p> <p>Outcome(s) is specific as to what students will be able to know/do as a result of their learning</p> <p>Outcome(s) is measurable</p> <p>Outcome(s) is consistent across modes of delivery (if applicable)</p>	<p>Add the full language of the learning outcomes (LOs) in future reports. In current form I am unable to provide evaluation.</p>	<p>CE</p>
<p>Assessment Strategies Strong assessment strategies are designed to produce data of high enough quality to be useful to faculty trying to understand student learning outcome achievement, uncover potential issues, and determine next steps to support continuous improvement. They do not rise to the rigor of research methods, though they may draw on some related tenants and strategies.</p>		<p>Assessment measure(s) is designed for precise alignment to designated outcome(s)</p> <p>Overall assessment strategy relies primarily on direct assessment measure(s)</p> <p>Indirect assessment measure(s) is included to provide supplemental perspectives</p> <p>Assessment data comes from multiple sources, either within a significant course or across the curriculum</p> <p>Assessment measures include rich and/or relevant displays of student learning (i.e. experiential learning, intensive writing, problem-based learning, licensure exams, etc.)</p> <p>Tools for evaluating student achievement are clearly described when necessary (i.e. rubrics, exam alignment key, preceptor evaluation, etc.)</p>		<p>Mature</p>

<p>Results & Analysis</p> <p>Clear depiction of results and strong analysis pairs with strong assessment strategies to allow faculty to determine appropriate interpretation of data and use of findings. Use of student achievement data rather than anecdotes, comparison to thresholds of proficiency, and thoughtful use of disaggregation to uncover potential group differences that might exist are all good practices.</p>		<p>The threshold for proficiency for each outcome is clearly stated relative to the measure/evaluation tool used</p> <p>The threshold for proficiency reflects reasonably high expectations for the program</p> <p>Actual student performance data on assessment measures is shared relative to the stated threshold for proficiency and (when applicable) the evaluation tool used</p> <p>Thoughtful discussion of faculty insights gained from findings is included</p> <p>When appropriate, student performance data is disaggregated by group, without identifying any specific student (ex: on-campus & distance cohorts in a program offering both forms of delivery)</p> <p>When applicable, missing data or significant limitations to how data may be interpreted or applied are described</p>	<p>For assignments where students just need to submit the work (resume, for instance), recognition probably doesn't need to be included in the benchmark for proficiency as in the assignments where students determining what needs to be addressed in the problem. If you do have instances where students simply don't do the assignment, they can be removed from the results and a notation can be made about missing data.</p>	<p>Mature</p>
<p>Continuous Improvement</p> <p>Assessment is about sharing and use of results to celebrate strong performance and improve in intentional ways. Assessment for continuous improvement includes engaging multiple faculty in assessment, comparing prior results to current results to examine our interventions, using findings to plan for the future, and sharing what we have learned.</p>		<p>Multiple program faculty are involved in the assessment process</p> <p>Plans for maintaining strong performance and/or improving student learning are clearly driven by assessment findings</p> <p>Plans for maintaining strong performance and/or improving student learning are within reasonable purview of program faculty</p> <p>If data from prior assessments is provided, reflection on changes over time and the possible impact any prior interventions is discussed</p> <p>A commitment to ongoing assessment is demonstrated in clear plans for upcoming assessment</p> <p>Assessment findings are shared with program faculty and any applicable stakeholders</p>	<p>I saw the note about concerns with sample size and utility of the data. Adding additional data points across the curriculum and program cohorts can help with reducing uncertainty, or adding a focus on summative assessment in major assignments toward the end of the curriculum can provide an additional data point that confirms or calls into question student progress toward mastery.</p>	<p>Mature</p>

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