

Degree: BA/BS Mathematics
2023-2024 Assessment Plan

	Student Learning Outcome #1	Written communication – students should demonstrate self-sufficiency in the proof-writing process.
PLAN	Assessment Method(s)	Two work samples from each of Math 3322, Math 3350/3351, and Math 4325 will be gathered and scored on a rubric measuring correctness of the proof and ability to communicate effectively.
	Proficiency	A student will be deemed proficient if they have an average score of 6.5 (out of 9) or higher on all the correctness of proof scores, with no more than two scores at 4 or below.
DO	Benchmark	At least 80% of mathematics majors should be deemed successful, have at least 50% of mathematics majors be deemed successful with an average score of 7.25 or higher in the Correctness of Proof rubric and to have at least 25% of mathematics majors be deemed successful with an average score of 8.25 or higher in the Correctness of Proof rubric.
	Results of Assessment	<p>Submissions from Math 3322 were not received from instructors.</p> <p>For Math 3350 in Fall 2023, there were only 5 students registered. Four samples were gathered. Their first proof samples (from the mid-term) scored 9, 7, 6, 5. Their second samples scored 7, 5, 5, 0. Their average scores were 7, 6.5, 5, 3.5. This did not meet our benchmark.</p> <p>Samples from Math 3351 in Spring 2024 were not received.</p> <p>For Math 4325 in Fall 2023, there were 9 students registered. Their first proof samples were 8.5, 7.5, 6.9, 5, 6.8, 8, 8, 5, 4.5. Their later scores were 9, 9, 8, 5, 8, 8, 8, 8, 5.8. Their average scores were 8.8, 8.25, 7.47, 5, 7.4, 8, 8, 6.5, 5.15. This means</p>

		that 66% of our students scored 7.25 or higher, therefore we met that benchmark. However, only 22% scored 8.25 or higher.
S T U D Y	Analysis of Results	The Math 4325 students have successfully met our benchmarks. Because of the small sample size in Math 3350, it is difficult to draw conclusions from this data. We will continue to monitor before deciding if extra interventions are needed for that course.

ACT	Improvement Plan for 2024-2025	<p>If we continue to measure this student learning outcome, we need to ensure that we receive submissions from all faculty teaching this course. This will come in the form of more consistent reminders (at the beginning of the semester, in the middle of the semester, and at the end of the semester) about providing samples to the committee.</p> <p>Because of the small sample size in Math 3350 and the success of students in Math 4325, we will continue to monitor this student learning outcome before making other changes.</p>
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	Student Learning Outcome #2	Written communication – students should demonstrate growth in the proof-writing process.
PLAN	Assessment Method(s)	Two work samples from each of Math 3322, Math 3350/3351, and Math 4325 will be gathered and scored on a rubric measuring the growth between first and second submissions.
	Proficiency	A student will be deemed successful if they score at least a 2 (out of 3) on the indication of growth rubric.
DO	Benchmark	At least 80% of mathematics majors should be deemed successful in their growth over the semester.
	Results of Assessment	<p>Submissions from Math 3322 were not received from instructors.</p> <p>Submissions from Math 3351 for Spring 2024 were not received.</p> <p>For Math 3350, the growth scores were 1, 2, 2, 3. This is 75% of those who were scored (one sample is missing).</p> <p>For Math 4325, the growth scores were 0.5, 1, 1.5, 2.5, 2.5, 2.5, 2.8, 2.8, 3. This is 66% of the students who were deemed successful.</p>
S T U D Y	Analysis of Results	<p>Students did not demonstrate as much growth as we would have liked during the semester.</p> <p>However, the sample size is small (the larger of the two classes had only 9 students enrolled).</p>

ACT	Improvement Plan for 2024-2025	<p>Because of the small number of students in this course (5-7 students each semester), and the lack of samples, we are reinforcing the submissions of these samples by emailing the instructor and mentioning the need for this data at department meetings.</p> <p>We would like to see more growth from students in Math 3350 and Math 4325. To this end, we will encourage course policies that allow students to resubmit work after feedback to improve their skills across the semester and to promote a growth mindset.</p> <p>Beginning in 2024-2025, we will gather samples from the beginning and end of Math 3322 and place these in student files. When the student completes Math 3350 and Math 4325, these will be scored on the growth rubric to demonstrate their programmatic growth.</p>
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	Student Learning Outcome #3	Oral communication - students should demonstrate self-sufficiency in producing expository material.
PLAN	Assessment Method(s)	Each mathematics major will give an oral presentation in MATH 3350, MATH 3351 and MATH 4325 defending his or her solution to a problem. Students will be scored via a rubric on content knowledge.
	Proficiency	A student will be deemed proficient if they have score of 6.5 (out of 9) or higher on the content knowledge rubric.
DO	Benchmark	At least 80% of mathematics majors should be deemed successful, have at least 50% of mathematics majors be deemed successful with an average score of 7.25 or higher and to have at least 25% of mathematics majors be deemed successful with an average score of 8.25 or higher.
	Results of Assessment	<p>This assessment was lacking in the course design for Math 3350 in Fall 2023. No data was submitted for Math 4325 in Spring 2024.</p> <p>For Math 4325 in Fall 2023, the results were (9 students):</p> <ul style="list-style-type: none"> • For content knowledge: 5.4, 5.8, 6.0, 7.1, 7.3, 7.5, 8.0, 8.0, 8.1 • For communication skills: 5.2, 5.9, 6.2, 7.0, 7.3, 7.3, 7.9, 8.1, 8.3, <p>For Math 3351 in Spring 2024, the results were:</p>
S T U D	Analysis of Results	For Math 3350 in Fall 2023, no samples were gathered as oral presentations were not included in the course design.

Y		<p>For Math 4325, we did not meet either benchmark. Our students previously had several courses in a row which emphasized oral communication skills throughout the semester. Many faculty who partook in that have retired, and so we need to re-emphasize and retrain these teaching methods.</p>
ACT	Improvement Plan for 2024-2025	<p>The course design for Math 3350 in Fall 2023 did not include oral presentations. We have a number of new faculty and the course design/instructional style of those faculty do not align well with this student learning outcome. We are continuing to train faculty and discuss appropriate learning outcomes to reflect our current faculty and departmental values.</p>

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	Student Learning Outcome #4	Oral communication - students should demonstrate self-sufficiency in presenting the solution to a new problem orally.
PLAN	Assessment Method(s)	Each mathematics major taking MATH 4307 will give an oral presentation defending a problem solving strategy including a problem showing how that strategy is used. Students will be scored via a rubric on oral communication skills.
	Proficiency	A student will be deemed proficient in if they score a 6.5 (out of 9) or higher on the communication rubric.
DO	Benchmark	At least 80% of mathematics majors should be deemed successful, have at least 50% of mathematics majors be deemed successful with an average score of 7.25 or higher and to have at least 25% of mathematics majors be deemed successful with an average score of 8.25 or higher.
	Results of Assessment	This class ran in Spring 2024 with five students. Of those 5, one never attended class and so had no oral presentations. The other 4 students scored a 9 on the rubric, giving us an 80% success rate.
S T U D Y	Analysis of Results	Of those engaged in the course, all successfully met this benchmark.

ACT	Improvement Plan for 2024-2025	<p>This course continues to be revised to best serve the students enrolled. We are rewriting the curriculum during the 2024-2025 year to turn this course into a capstone course for BA/BS students both with and without teaching certification goals.</p>
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	Student Learning Outcome #5	Central limit theorem – no less than one-fourth of the questions of the final exam for the course Math 3370 will include applications of the central limit theorem.
PLAN	Assessment Method(s)	The instructor of record will (1) score the problems for correctness of the final answers on problems related to the central limit theorem. Additionally, the student is expected to (2) pass Math 3370 with a grade of C or better to satisfactorily meet this expectation.
	Proficiency	A student will be deemed proficient if they earn 70% of the available points on central limit theorem problems. Additionally, they will earn a grade of C or better in the course.
DO	Benchmark	At least 80% of the mathematics majors should pass the class with a grade of “C” or better and must earn at least 70% of the total possible points from the Central Limit problems on the Math 3370 final exam.
	Results of Assessment	Currently, no faculty have submitted their final exams for assessment, so we are unable to measure our progress on the goal of students earned 70% of the available points for Central Limit Theorem Questions. For Fall 2023, the pass rate for Math 3370 was 87% (87/100 students), and in Spring 2024 the pass rate was 78% (68/87 students).
S T U D Y	Analysis of Results	In terms of course pass rates, we met our goal for Fall 2023 and fell slightly short of our goal for Spring 2024.

ACT	Improvement Plan for 2024-2025	<p>We will be adjusting our 2024-2025 assessment plan to no longer measure this goal as it no longer reflects the goals and priorities of the mathematics department and our programs.</p> <p>In Fall 2024, we are piloting a student survey measuring their attitudes towards proof and mathematics. This will be given to students at checkpoints in their math careers (Math 2413, Math 3322, Math 3350, and Math 4325).</p>
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	Student Learning Outcome #6	Content proficiency exam – mathematics majors seeking teacher certification must take and pass the content proficiency exam.
PLAN	Assessment Method(s)	We will track the content proficiency exam score for students seeking teacher certification.
	Proficiency	Students seeking teacher certification must earn at least 75% on the content proficiency exam.
DO	Benchmark	100% of students seeking certification must take and pass the content proficiency exam with a score of at least 75%.
	Results of Assessment	Four students took this assessment during 2023. Two students passed this assessment, making the success rate 50%.
S T U D Y	Analysis of Results	We have missed our benchmark and will continue to address this goal.

ACT	Improvement Plan for 2024-2025	<p>The math department began a course audit of courses required for secondary certification in Summer 2023. We are continuing efforts to redesign courses most often taken by those students to enhance their success on this content proficiency exam. In particular, we have redesigned Math 4321 to address content they need for the exam and as a capstone course. However, this course first ran in Spring 2024, and so we are waiting to see the effects of this redesign.</p>
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