

Assurance of Student Learning 2019-2020	
Ogden College of Science & Engineering	Department of Mathematics
730 Middle Grades Mathematics	
Natasha Gerstenschlager Wilson	

<i>Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.</i>			
Student Learning Outcome 1: Graduates will communicate mathematics effectively in both written and oral forms.			
Instrument 1	Capstone project in MATH 490.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.			Met
Not Met			
Student Learning Outcome 2: Students will learn application of mathematics in solving real world problems and will demonstrate their capacity to use multiple strategies and appropriate technology to apply mathematics in problem-solving situations.			
Instrument 1	Capstone project in MATH 490.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.			Met
Not Met			
Student Learning Outcome 3: Students will be able to use mathematics as a tool for decision making.			
Instrument 1	Capstone project in MATH 490.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.			Met
Not Met			
Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)			
We have implemented specific changes for each student learning outcome, and will continue to monitor progress on students' success in meeting our criteria on each one.			

Student Learning Outcome 1

Student Learning Outcome	Graduates will communicate mathematics effectively in both written and oral forms.		
Measurement Instrument 1	Capstone project in MATH 490.		
Criteria for Student Success	Students will average a 2.5 or better on a 0 to 4 scale on rubric measures of the communication of mathematics in their senior project.		
Program Success Target for this Measurement	80%	Percent of Program Achieving Target	100%
Methods	<p>Students are graded on both a 12- to 20-page paper and a 23- to 27-minute presentation of their senior project. Each project has three faculty graders, including the faculty member who supervised the student’s project research. The categories measuring the communication of mathematics on the paper are</p> <ul style="list-style-type: none"> • Writing of Paper: Readability, Structure, Formatting, Style, Grammar, Spelling, Citations, References, Writing Conventions, Length, etc., with a 3 denoting “Accomplished” and a 2 denoting “Sufficient”; and • Delivery of Presentation: Style, Comfort, Audience Engagement, Flexibility, Tone, etc., with a 3 denoting “Accomplished” and a 2 denoting “Sufficient”. <p>We had 10 of 10 students meet this criteria.</p>		
Based on your results, highlight whether the program met the goal Student Learning Outcome 1.			Met
Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.)			
We have added more days to the instructional calendar for MATH 490 to address issues with writing and presentation. In addition, during the 2019-2020 academic year, we implemented similar projects in 403 and 413 to help students be better prepared for this course.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
We will continue to monitor students’ success on this learning outcome.			
Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)			
This year, we will brainstorm additional ways to support our students in meeting these objectives. Some ideas might include more writing projects in other junior/senior courses, more presentations in junior/senior courses, and more opportunities to engage in challenging problems that require deep analysis. We will meet as a committee on August 19, 2020, at which point we will have this discussion and determine next steps. Implementation of ideas will start Fall 2020.			

Student Learning Outcome 2

Student Learning Outcome	Students will learn application of mathematics in solving real world problems and will demonstrate their capacity to use multiple strategies and appropriate technology to apply mathematics in problem-solving situations.		
Measurement Instrument 1	Capstone project in MATH 490.		
Criteria for Student Success	Students will average a 2.5 or better on a 0 to 4 scale on rubric measures of the application of mathematics in their senior project.		
Program Success Target for this Measurement	80%	Percent of Program Achieving Target	80%
Methods	<p>Students are graded on both a 12- to 20-page paper and a 23- to 27-minute presentation of their senior project. Each project has three faculty graders, including the faculty member who supervised the student’s project research. The categories measuring the communication of mathematics on the paper are</p> <ul style="list-style-type: none"> • Quality of Mathematics: Appropriateness of Topic/Problem, Level of Difficulty, Originality, with a 3 denoting “Accomplished” and a 2 denoting “Sufficient”; and • Quantity of Mathematics: Student exhibits a body of his/her own mathematical work appropriate for a 3 credit, 400-level mathematics class, with a 3 denoting “Accomplished” and a 2 denoting “Sufficient”. <p>We had 8 out of 10 students meet this criteria.</p>		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.		Met	Not Met
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)			
The projects added in MATH 403 and 413 gave students an additional opportunity to address this student learning outcome. In addition, we had class days in MATH 490 where we specifically addresses these two bullets of the rubric. We had students present and discuss their work, focusing on how it was rigorous. We also had regular check-ins with advisees throughout the semester.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
We will continue to monitor students’ success on this learning outcome.			
Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)			
Again, the projects in 403 and 413 will continue as well as the course days to address rigor and quality. In addition, MATH 490 advisors will be reminded to check in with students regarding these bullets, especially given the challenges students will face Fall 2020.			

Student Learning Outcome 3

Student Learning Outcome	Students will be able to use mathematics as a tool for decision making.		
Measurement Instrument 1	Capstone project in MATH 490.		
Criteria for Student Success	Students will average a 2.5 or better on a 0 to 4 scale on rubric measures of the application of mathematics in their senior project.		
Program Success Target for this Measurement	80%	Percent of Program Achieving Target	80%
Methods	<p>Students are graded on both a 12- to 20-page paper and a 23- to 27-minute presentation of their senior project. Each project has three faculty graders, including the faculty member who supervised the student’s project research. The categories measuring the communication of mathematics on the paper are</p> <ul style="list-style-type: none"> • Mathematical Accuracy: Appropriate use of mathematical tools, lack of errors, etc., with a 3 denoting “Accomplished” and a 2 denoting “Sufficient”; and • Mathematical Understanding: Evidence that student deeply and thoroughly understands the project, and that the project is student’s own work, with a 3 denoting “Accomplished” and a 2 denoting “Sufficient” <p>We had 8 of 10 students meet this criteria.</p>		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.		Met	Not Met
Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.)			
The projects added in MATH 403 and 413 gave students an additional opportunity to work with mathematical tools and to think about how those tools improved their mathematical understanding.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
We will continue to monitor students’ success on this learning outcome.			
Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)			
We will continue with implementing the projects in MATH 403 and 413 as they seem to be helping our students to meet this objective.			