

**Assurance of Student Learning
2018-2019**

Ogden College of Science & Engineering

Department of Mathematics

730 Middle Grades Mathematics

Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.

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	58.3%
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 7 of 12 students meet this criteria, with one of the 12 withdrawing from the course before being graded.</p>		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.		Met	Not Met
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)			
Change in instructional methodology for MATH 490. Specifically, we have added course days to the calendar in which we address mathematical writing and presentation skills. In addition, we have added a project into MATH 403 that is designed to prepare students for the project in MATH 490 – specifically focusing on writing and presenting mathematics effectively. We also plan to add a similar project to MATH 413. These changes will take place during the 2019-2020 academic year.			
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.			

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	41.7%
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 5 of 12 students meet this criteria, with one of the 12 withdrawing from the course before being graded.</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 will give students an additional opportunity to address this student learning outcome. In addition, we have added in a “check point” within MATH 490 to make sure students are on par in terms of the quality and quantity of mathematics they are exploring. These changes will take place during the 2019-2020 academic year.			
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.			

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 use of mathematics as a tool for decision making in their senior project.		
Program Success Target for this Measurement	80%	Percent of Program Achieving Target	41.7%
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 5 of 12 students meet this criteria, with one of the 12 withdrawing from the course before being graded.</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 planned for program improvement. The actions should include a timeline.)			
The projects added in MATH 403 and 413 will give students an additional opportunity to address this student learning outcome. In addition, we have added in a “check point” within MATH 490 to make sure students are on par in terms of the quality and quantity of mathematics they are exploring. These changes will take place during the 2019-2020 academic year.			
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.			