

**Assurance of Student Learning
2018-2019**

Ogden College of Science & Engineering

Department of Mathematics

085 Master of Science in 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: Students should possess knowledge of a broad topic in mathematics commensurate with that of a Masters graduate.

Instrument 1	All students must take a minimum of 30 credit hours of graduate-level mathematics courses. The courses of the MS program give a broad and deep background in the given concentration.
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Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.	Met	Not Met
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Student Learning Outcome 2: Students should be able to apply research methods to understand mathematical problems and possess the ability to apply technology and other tools to effectively investigate mathematical problems.

Instrument 1	Masters thesis.
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Instrument 2	Comprehensive exam.
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Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.	Met	Not Met
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Student Learning Outcome 3: Students should be able to speak and write with mathematical maturity commensurate with that of a Masters graduate.

Instrument 1	Masters thesis.
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Instrument 2	Comprehensive exam.
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Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.	Met	Not Met
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Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)

We are planning to make the program 33 total hours and require that students both take the course MATH 598 Graduate Seminar: Communicating Mathematics and Technical Writing, and require the completion of a thesis. We will also reduce the number of choices in the “core” courses, to address course enrollment issues in our graduate MS course offerings. These changes will take place during the 2019-2020 academic year.

Student Learning Outcome 1

Student Learning Outcome	Students should possess knowledge of a broad topic in mathematics commensurate with that of a Masters graduate.		
Measurement Instrument 1	A broad-based curriculum in their concentration.		
Criteria for Student Success	Completion of the broad-based curriculum in their concentration.		
Program Success Target for this Measurement	90%	Percent of Program Achieving Target	100%
Methods	<p>The 085 program, which requires a minimum of 30 credit hours for completion, has three concentrations: general math, computational math, and mathematical economics. The concentration in general math requires the student take</p> <ul style="list-style-type: none"> • Intermediate Analysis I; • Complex Variables; • either Algebraic Systems, Partial Differential Equations, or Topology I; • either Real Analysis, Advanced Applied Mathematics I, Graph Theory, or Complex Analysis; • a research tool course; and • 6 other courses from a wide range of graduate mathematics and statistics topics. <p>The concentration in computational mathematics requires the student take</p> <ul style="list-style-type: none"> • Numerical Analysis I and II; • Introduction to Operations Research; • the computer science course Analysis of Algorithms; • the statistics course Statistical Methods I; • two computer science courses from Parallel and Distributed Computing, Data Mining Techniques and Tools, and Advanced Topics in Computer Science; • a research tool course; and • three courses from our more applied graduate mathematics and statistics topics. <p>The concentration in mathematical economics requires the student take</p> <ul style="list-style-type: none"> • three economics courses Regression and Econometric Analysis, Applied Microeconomic Theory, and Applied Macroeconomic Theory; • the statistics course Statistical Methods I; • either Intermediate Analysis I or Probability and Statistics II; • either Advanced Differential Equations or Statistical Methods II; • a research tool course; and • four courses from our more applied graduate mathematics, statistics, or economics topics. <p>All of these courses are graduate courses and are three credit hours. We had three students complete the program, all in the general concentration and all by completing a thesis.</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.)		
We are planning to make the program 33 total hours and require that students both take the course MATH 598 Graduate Seminar: Communicating Mathematics and Technical Writing, and require the completion of a thesis. We will also reduce the number of choices in the “core” courses, to address course enrollment issues in our graduate MS course offerings. 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 how these changes affect our rates of meeting our criteria.		

Student Learning Outcome 2

Student Learning Outcome	Students should be able to apply research methods to understand mathematical problems and possess the ability to apply technology and other tools to effectively investigate mathematical problems.		
Measurement Instrument 1	Masters thesis.		
Criteria for Student Success	Successful completion and defense of the masters thesis.		
Program Success Target for this Measurement	90%	Percent of Program Achieving Target	100%
Methods	All students choosing the thesis option must complete a rigorous masters thesis with the supervision of a member of our graduate faculty, and defend that thesis upon its completion. All three of our program graduates successfully completed and defended a thesis.		
Measurement Instrument 2	Comprehensive exam.		
Criteria for Student Success	Successful completion of the comprehensive exam.		
Program Success Target for this Measurement	90%	Percent of Program Achieving Target	NA
Methods	No students took the comprehensive exam.		
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.)			
We are removing the comprehensive exam option from our program, and requiring each program student to complete and defend a masters thesis. The changes will be made 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 how these changes affect our rates of meeting our criteria.			

Student Learning Outcome 3

Student Learning Outcome	Students should be able to speak and write with mathematical maturity commensurate with that of a Masters graduate.		
Measurement Instrument 1	Masters thesis.		
Criteria for Student Success	Successful completion and defense of the masters thesis.		
Program Success Target for this Measurement	90%	Percent of Program Achieving Target	100%
Methods	All students choosing the thesis option must complete a rigorous masters thesis with the supervision of a member of our graduate faculty, and defend that thesis upon its completion. All three of our program graduates successfully completed and defended a thesis.		
Measurement Instrument 2	Comprehensive exam.		
Criteria for Student Success	Successful completion of the comprehensive exam.		
Program Success Target for this Measurement	90%	Percent of Program Achieving Target	NA
Methods	No students took the comprehensive exam.		
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.)			
We are removing the comprehensive exam option from our program, and requiring each program student to complete and defend a masters thesis. The changes will be made 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 how these changes affect our rates of meeting our criteria.			