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| **Assurance of Student Learning****2020-2021** |
| Ogden College of Science & Engineering  | Department of Mathematics |
| 049 Master of Arts in Mathematics |
| Hope Marchionda  |

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| ***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 will be able to communicate mathematics in a written form at a level commensurate with that of students completing a master’s degree. |
| **Instrument 1** | Discussion boards, regularly assigned quizzes, a midterm, and a final from MATH 501, Introduction to Probability and Statistics I. A score of 8 or higher on a 10-point multipart rubric will demonstrate students’ ability to communicate mathematically. We expect at least 75% of students to meet this learning outcome. |
| **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 be able to write proofs of theorems in mathematics. |
| **Instrument 1** | Assessments from MATH 503, Introduction to Analysis. A score of 8 or higher on a 10-point multipart rubric for problems given on assessments will indicate that students are able to use multiple strategies in problem-solving situations. We expect at least 75% of students to meet this learning outcome. |
| **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 demonstrate their capacity to use multiple strategies and appropriate technology to apply mathematics in problem-solving situations and will justify their solutions with sound logic. |
| **Instrument 1** | Assessments from MATH 512, Geometry from an Advanced Perspective. A score of 8 or higher on a 10-point multipart rubric will demonstrate students’ ability to choose appropriate strategies, including the use of technology, to solve problems and justify their solutions. We expect at least 75% of students to meet this learning outcome. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **Met** | **Not Met** |
| **Student Learning Outcome 4:** Students will demonstrate their capacity for collaboration in the mathematics classroom as a learner and as a teacher. |
| **Instrument 1** | Discussion boards from MATH 511, Algebra from an Advanced Perspective. A score of 8 or higher on a 10-point multipart rubric will demonstrate students’ ability to collaborate when working towards solutions to problems. We expect at least 75% of students to meet this learning outcome. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 4.** | **Met** | **Not Met** |
| **Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)**  |
| The MA in Mathematics will be undergoing a program change during the 2020-2021 academic year. This program revision will include possible revisions to existing courses and the development of new courses to align to the current needs of teachers in the region.  |

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| **Student Learning Outcome 1** |
| **Student Learning Outcome**  | Students will be able to communicate mathematics in a written form at a level commensurate with that of studentscompleting a master’s degree. |
| **Measurement Instrument 1**  | Discussion boards, regularly assigned quizzes, a midterm, and a final from MATH 501, Introduction to Probability and Statistics I |
| **Criteria for Student Success** | A score of 8 or higher on a 10-point multipart rubric will demonstrate students’ ability to communicatemathematically. |
| **Program Success Target for this Measurement** | 75% | **Percent of Program Achieving Target** | 77% |
| **Methods**  | The artifacts from all enrolled students (n=13) that were used to assess this SLO were required discussion boards, regularly assigned quizzes, a midterm, and a final.  |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **Met** | **Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The structure of this course was highly similar to what it was the previous year, with particular emphasis on students being able to provide statistically precise interpretations for given situations. The 77% of students who met the goal grew with respect to and demonstrated this ability regularly throughout the semester on discussion boards, quizzes, and exams. The students who did not meet the SLO either completed discussion boards sporadically, regularly engaged in bare minimum levels of interpretation, or both.  |
| **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 student success on this learning outcome. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| The course used to assess this outcome is a core course in the MA in Mathematics Program and is offered once a year. This course will be assessed again during the spring 2022 semester when the course is taught again.  |

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| **Student Learning Outcome 2** |
| **Student Learning Outcome**  | Students will be able to write proofs of theorems in mathematics. |
| **Measurement Instrument 1** | Assessments from MATH 503, Introduction to Analysis.  |
| **Criteria for Student Success** | A score of 8 or higher on a 10-point multipart rubric for problems given on assessments will indicate that studentsare able to use multiple strategies in problem-solving situations. |
| **Program Success Target for this Measurement** | 75% | **Percent of Program Achieving Target** | 87.5% |
| **Methods**  | The artifacts from all enrolled students (n=8) used to assess this SLO were homework, midterm, final. |
| **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.) |
| During this academic year, we revised the MA in Mathematics program. This new program will include MATH 503 as one of the core classes required for the program.  |
| **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 student success on this learning outcome. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| The course used to assess this outcome is a core course in the MA in Mathematics Program and is offered once a year. This will be assessed again during the fall 2021 semester when the course is taught again.  |

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| **Student Learning Outcome 3** |
| **Student Learning Outcome**  | Students will demonstrate their capacity to use multiple strategies and appropriate technology to apply mathematics in problem-solving situations and will justify their solutions with sound logic. |
| **Measurement Instrument 1** | Assessments from MATH 512, Geometry from an Advanced Perspective. |
| **Criteria for Student Success** | A score of 8 or higher on a 10-point multipart rubric will demonstrate students’ ability to choose appropriate strategies, including the use of technology, to solve problems and justify their solutions.  |
| **Program Success Target for this Measurement** | 75% | **Percent of Program Achieving Target** | 85.7% |
| **Methods**  | The artifacts from all enrolled students (n=7) used to assess this SLO were the midterm and final |
| **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.) |
| During this academic year, the MA in Mathematics underwent a program revision. We planned to implement new curriculum for MATH 511 and 512 during the 2020-2021 academic year. However, with COVID, that was postponed until the 2021-2022 academic year. The new curriculum will be aligned with MATH 511 which is a prerequisite for this course. While it will retain the theoretical rigor, it will have a more inquiry based pedagogical approach.  |
| **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 student success on this learning outcome. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| The course used to assess this outcome is a core course in the MA in Mathematics Program and is offered once a year. This course is still a required course for the new program and will be assessed again during the spring 2022 semester when the course is taught again. |

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| **Student Learning Outcome 4** |
| **Student Learning Outcome**  | Students will demonstrate their capacity for collaboration in the mathematics classroom as a learner and as ateacher. |
| **Measurement Instrument 1** | Discussion boards and assignments from MATH 511, Algebra from an Advanced Perspective.  |
| **Criteria for Student Success** | A score of 8 or higher on a 10-point multipart rubric will demonstrate students’ ability to collaborate when working towards solutions to problems. We expect at least 75% of students to meet this learning outcome. |
| **Program Success Target for this Measurement** | 75% | **Percent of Program Achieving Target** | 90% |
| **Methods**  | The artifacts from all enrolled students (n=10) used to assess this SLO were assignments and discussion boards.  |
| **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.) |
| During this academic year, the MA in Mathematics underwent a program revision. We had planned to implement new curriculum for MATH 511 and 512 during the 2020-2021 academic year. However, with COVID, that was postponed until the 2021-2022 academic year. The new curriculum will be aligned with MATH 512 as this course is a prerequisite for MATH 512. While it will retain the theoretical rigor, it will have a more inquiry based pedagogical approach.  |
| **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 student success on this learning outcome. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| The course used to assess this outcome is a core course in the MA in Mathematics Program and is offered once a year. This course is still a required course for the new program and will be assessed again during the fall 2021 semester when the course is taught again. |