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| **Assurance of Student Learning Report****2022-2023** |
| Ogden College of Science and Engineering | Department of Mathematics |
| Mathematics, 528 |
| Ngoc Nguyen |
| ***Is this an online program***? [ ]  Yes [x]  No | Please make sure the Program Learning Outcomes listed match those in CourseLeaf . Indicate verification here [x]  Yes, they match! (If they don’t match, explain on this page under **Assessment Cycle)** |

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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. Add more Outcomes as needed.*** |
| **Program Student Learning Outcome 1: Students will be prepared for employment in government, industry, or academic settings.** |
| **Instrument 1** | Employment prospects of seniors will be monitored in an exit survey. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Student Learning Outcome 2: Students will be able to use technology and apply mathematics to solve problems effectively.** |
| **Instrument 1** | Technology usage will be monitored in an exit survey. |
| **Instrument 2** | Completion of a capstone project in MATH 498. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 2.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Student Learning Outcome 3: Students will have well-developed abilities to utilize critical thinking and communicate ideas effectively.** |
| **Instrument 1** | Completion of a capstone project in MATH 498. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 3.** | **[x]  Met** | **[ ]  Not Met** |
| **Assessment Cycle Plan:**  |
| Nothing will change in terms of timeline. |

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| **Program Student Learning Outcome 1** |
| **Program Student Learning Outcome**  | **Students will be prepared for employment in government, industry, or academic settings.**  |
| **Measurement Instrument 1**  | Employment prospects of seniors will be monitored in an exit survey. |
| **Criteria for Student Success** | Students have clear career plan and feel prepared for those types of jobs.  |
| **Program Success Target for this Measurement** | 80%  | **Percent of Program Achieving Target** | 100% |
| **Methods**  | Seniors completing the 528 major all take MATH 498, our senior capstone course. These students are required to complete an exit survey as part of that course. Specifically, the students provide responses to the open-ended questions, “What are your career plans?”, “Do you feel that your mathematics major has prepared you well for your intended career? Explain.”, and “Are you searching for employment after graduation? If so, have you had job interviews or offers yet? Please give details.”  |
| **Measurement Instrument 2** | Feedback from recent graduates will be collected through Alumni Survey.  |
| **Criteria for Student Success** | Students indicate that departmental coursework provide a sufficient knowledge base for their career. |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | **N/A** |
| **Methods** | Recent graduates were asked to fill out the Alumni Survey (administered through emails from Alumni Relation). Specifically, the students provide Yes/No answer to the questions “ Did the departmental coursework provide a sufficient knowledge base for your career?Emails were sent out to recent graduates but there were no survey completed.   |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** |
| **Results**: The results are what was expected. **Conclusions**: We made no programmatic changes based on the above data.**Plans for Next Assessment Cycle**: We will continue to collect career data on our senior exit survey and alumni survey, invite graduates back to campus to discuss their careers, and will endeavor to stay in contact with our graduates via social media and other means. We will do this again throughout 2023-24. |

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| **Program Student Learning Outcome 2** |
| **Program Student Learning Outcome**  | Students will be able to use technology and apply mathematics to solve problems effectively. |
| **Measurement Instrument 1** | Technology usage will be monitored in an exit survey. |
| **Criteria for Student Success** | Students feel like they have had adequate exposure to technology in their classes.  |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | 75% |
| **Methods**  | Seniors completing the 528 major all take MATH 498, our senior capstone course. These students are required to complete an exit survey as part of that course. Specifically, the students provide responses to the open-ended questions, “Do you feel like the mathematics faculty is integrating technology into the curriculum appropriately? Explain.” And “Please list the courses in which assignments required you to use technology, such as a graphing calculator, Mathematics, Geometer’s Sketchpad, etc.” |
| **Measurement Instrument 2** | Completion of a capstone project in MATH 498. |
| **Criteria for Student Success** | Students will average a 3 or better on a 4-point 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** | 100% |
| **Methods** | Students are graded on both an 12-to-20-page paper and a 25-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 application of mathematics on the paper and presentation are* Project Development, where a 3 denotes that the students are accomplished in showing “Appropriateness of topics/problem, originality, content development and analysis, organization and coherence, etc.”
* Accuracy, where a 3 denotes that the students are accomplished in “Appropriate use of mathematical tools.”
* Understanding, where a 3 denotes that the students are accomplished in “Deeply and thoroughly understands the project, and that the project is the student’s own work.”
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| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.** | **[x]  Met** | **[ ]  Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** |
| **Results**: The results are as expected. **Conclusions**: We made no programmatic changes based on the above data.**Plans for Next Assessment Cycle**: We will continue to require a capstone project for all our 528 seniors, work carefully with them, and help them succeed to the best of their ability. This will be repeated in 2023-2024.  |

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| **Program Student Learning Outcome 3** |
| **Program Student Learning Outcome**  | Students will have well-developed abilities to utilize critical thinking and communicate ideas effectively. |
| **Measurement Instrument 1** | Completion of a capstone project in MATH 498.  |
| **Criteria for Student Success** | Students will average a 3 or better on a 4-point scale on rubric measures of their utilization of critical thinking and the communication of ideas in their senior project.  |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | 100% |
| **Methods**  | Students are graded on both an 12-to-20-page paper and a 25-minute presentation of their senior project. Each project has three faculty graders, including the faculty member who supervised the student’s project research. The category measuring critical thinking on the paper and the presentation is* Project Development, where a 3 denotes that the students are accomplished in showing “Appropriateness of topics/problem, originality, content development and analysis, organization and coherence, etc.”

The categories measuring the communication of ideas on the paper is* Writing of Paper, where a 3 denotes that the students are accomplished in “Readability, structure, formatting, style, grammar, spelling, citations, references, writing conventions, length, etc.”

The categories measuring the communication of ideas on the presentation is* Delivery of Presentation, where a 3 denotes that the students are accomplished in showing “Style, comfort, audience engagement, flexibility, tone, length, etc.”
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| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **[x]  Met** | **[ ]  Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** |
| **Results**: The results are as expected. **Conclusions**: We made no programmatic changes based on the above data.**Plans for Next Assessment Cycle**: We will continue to require a capstone project for all our 528 seniors, work carefully with them, and help them succeed to the best of their ability. This will be repeated in 2023-2024.  |

**Curriculum Map**

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