|  |
| --- |
| **Assurance of Student Learning****2020-2021** |
| *Ogden College of Science and Engineering* | *Department of Earth, Environmental, and Atmospheric Sciences* |
| *Geological Sciences #5008* |
| *Margaret Crowder* |

|  |
| --- |
| ***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 apply fundamental geological principles in solving problems. |
| **Instrument 1** | Direct: During the final senior semester, all graduating students are required to take the capstone Geology 499 Professional Preparation class, in which students take a comprehensive exam. In this exam, there are 12 questions related to SLO 1, representing key concepts from each of the six common-core courses in the Geological Sciences B.S. degree curriculum. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Student Learning Outcome 2:** Students will recognize and articulate the integrative nature and deep-time connection of various earth system components, including lithosphere, hydrosphere, atmosphere, and biosphere. |
| **Instrument 1** | Direct: During the final senior semester, all graduating students are required to take the capstone Geology 499 Professional Preparation class, in which students take a comprehensive exam. In this exam, there are 12 questions related to SLO 2, representing key concepts from each of the six common-core courses in the Geological Sciences B.S. degree curriculum. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.** | **[x]  Met** | **[ ]  Not Met** |
| **Student Learning Outcome 3:** Students will be able to demonstrate understanding of current societal issues related to earth science. |
| **Instrument 1** | Direct: During the final senior semester, all graduating students are required to take the capstone Geology 499 Professional Preparation class, in which students take a comprehensive exam. In this exam, there are 6 questions related to SLO 3, representing key concepts from each of the six common-core courses in the Geological Sciences B.S. degree curriculum. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)**  |
| During what is generally their final fall semester of the Geological Sciences program, majors take Geol 499 – a professional preparation capstone experience. For 2020-2021, the Geological Sciences program created its own capstone comprehensive exam, consisting of 30 questions over learning objectives central to the program, to be given during Geol 499. The exam was developed to better focus student assessments on the program core courses. Overall goals were met for each of the three SLOs covered, which indicates a successful first-year implementation for this new assessment. As with all new assessments, there will likely be adjustments and reevaluation as more data is collected in future years. In particular, the program would like to see all individual LO course averages increase beyond the current goal. For this past year, Petrology fell just below the goal average on two of the LOs – SLO1 and SLO3. This is not necessarily unexpected for this course, as majors in Geol 499 (a fall semester course) may not have yet taken Petrology (a spring semester course). Additionally, it is to be expected that all averages may have been depressed during AY 20-21 due to the COVID-19 pandemic and the stressful environments and new learning situations students encountered.As overall goals were met, the current assessment will be used again for AY 21-22. Follow-up will take the form of looking at individual course averages in the coming year to determine if all courses meet that goal in a non-pandemic year. Re-evaluation, if necessary, will occur as more data is collected.  |

|  |
| --- |
| **Student Learning Outcome 1** |
| **Student Learning Outcome**  | Students will be able to apply fundamental geological principles in solving various problems. |
| **Measurement Instrument 1**  | During the final senior semester, all graduating students are required to take the capstone Geology 499 Professional Preparation class, in which students take a comprehensive exam. In this exam, there are 12 questions related to SLO 1, representing key concepts from each of the six common-core courses in the Geological Sciences B.S. degree curriculum. |
| **Criteria for Student Success** | The average grade of the 12 questions should be no less than 60%. For no individual course should the average score be less than 40%. |
| **Program Success Target for this Measurement** | 60% | **Percent of Program Achieving Target** | 64% |
| **Methods**  | **N = 11 (all students in the capstone course)*** **Overall score 68%**
	+ The Earth 77%
	+ Earth’s Past & Future 94%
	+ Mineralogy 52%
	+ Petrology 39%
	+ Sedimentology & Stratigraphy 91%
	+ Structural Geology 52%
 |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The overall target was achieved and students were successful in meeting the overall goal for this LO. The program set a lower individual course assessment goal, as since Geol 499 is offered only in fall semesters, a good proportion of program majors will have not yet taken some of the upper-division course courses covered by the exam or may be completing one of these courses in the semester of capstone assessment. Additionally, it was understood for this past assessment year that the COVID-19 pandemic created a difficult environment for our seniors over their final semesters. All courses but Petrology met the individual course goal, but based on the factors just mentioned, that LO average for this one course is not concerning. The program currently plans to use this same assessment for fall 21, but if individual course averages have not risen to the goal during a more “normal” learning environment (non-pandemic situation), the assessment items may be reevaluated for the following assessment year. The only course currently under that mark on this LO is Petrology. There is no reason to make changes in this new assessment before collecting additional data under more normal circumstances for the students.  |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| Even though the program reached the overall goal on this LO and no follow-up is necessary on that item, after Fall 2021’s assessment, individual course averages will be evaluated again to determine if the goal has been met for all individual courses. If not, the program will then reevaluate individual items from those courses falling below the average.  |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Geol 499 is offered every fall semester, so the next assessment will be given in fall of 2021.  |

|  |
| --- |
| **Student Learning Outcome 2** |
| **Student Learning Outcome**  | Students will recognize and articulate the integrative nature and deep-time connection of various earth system components, including lithosphere, hydrosphere, atmosphere, and biosphere. |
| **Measurement Instrument 1**  | During the final senior semester, all graduating students are required to take the capstone Geology 499 Professional Preparation class, in which students take a comprehensive exam. In this exam, there are 12 questions related to SLO 2, representing key concepts from each of the six common-core courses in the Geological Sciences B.S. degree curriculum. |
| **Criteria for Student Success** | The average grade of the 12 questions should be no less than 60%. For no individual course should the average score be less than 40%. |
| **Program Success Target for this Measurement** | 60% | **Percent of Program Achieving Target** | 81% |
| **Methods**  | **N = 11 (all students in the capstone course)*** **Overall score 68%**
	+ The Earth 82%
	+ Earth’s Past & Future 83%
	+ Mineralogy 42%
	+ Petrology 64%
	+ Sedimentology & Stratigraphy 70%
	+ Structural Geology 65%
 |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The overall target was achieved and students were successful in meeting the overall goal for this LO. The program set a lower individual course assessment goal (also met on this LO) as since Geol 499 is offered only in fall semesters, a good proportion of program majors will have not yet taken some of the upper-division course courses covered by the exam or may be completing one of these courses in the semester of capstone assessment. Additionally, it was understood for this past assessment year that the COVID-19 pandemic created a difficult environment for our seniors over their final semesters. Even so, all individual course averages met the current goal for this LO.The program currently plans to use this same assessment for fall 21 to continue to collect data for further evaluation. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| Goals for both the overall LO measurement and for individual courses were met for this item, so no follow-up is necessary, though as this is a new assessment, continued data will be collected and re-evaluated as necessary in future years.  |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Geol 499 is offered every fall semester, so the next assessment will be given in fall of 2021.  |

|  |
| --- |
| **Student Learning Outcome 3** |
| **Student Learning Outcome**  | Students will be able to demonstrate understanding of current societal issues related to earth science. |
| **Measurement Instrument 1**  | During the final senior semester, all graduating students are required to take the capstone Geology 499 Professional Preparation class, in which students take a comprehensive exam. In this exam, there are 6 questions related to SLO 3, representing key concepts from each of the six common-core courses in the Geological Sciences B.S. degree curriculum. |
| **Criteria for Student Success** | The average grade of the 6 questions should be no less than 60%. For no individual course should the average score be less than 40%. |
| **Program Success Target for this Measurement** | 60% | **Percent of Program Achieving Target** | 90% |
| **Methods**  | **N = 11 (all students in the capstone course)*** **Overall score 71%**
	+ The Earth 45%
	+ Earth’s Past & Future 97%
	+ Mineralogy 91%
	+ Petrology 36%
	+ Sedimentology & Stratigraphy 89%
	+ Structural Geology 68%
 |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The overall target was achieved and students were successful in meeting the overall goal for this LO. The program set a lower individual course assessment goal, as since Geol 499 is offered only in fall semesters, a good proportion of program majors will have not yet taken some of the upper-division course courses covered by the exam or may be completing one of these courses in the semester of capstone assessment. Additionally, it was understood for this past assessment year that the COVID-19 pandemic created a difficult environment for our seniors over their final semesters. All courses but Petrology met the individual course goal, but based on the factors just mentioned, that LO average for this one course is not concerning. The program currently plans to use this same assessment for fall 21, but based on future data the assessment items may be reevaluated for the following assessment year. There is no reason to make changes in this new assessment before collecting additional data under more normal circumstances for the students. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| Even though the program reached the overall goal on this LO and no follow-up is necessary on that item, after Fall 2021’s assessment, individual course averages will be evaluated again to determine if the goal has been met for all individual courses. If not, the program will then reevaluate individual items from those courses falling below the average. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Geol 499 is offered every fall semester, so the next assessment will be given in fall of 2021. |