|  |  |  |
| --- | --- | --- |
| **Assurance of Student Learning Report**  **2023-2024** | | |
| *Ogden College of Science and Engineering* | | *Department of Earth, Environmental, and Atmospheric Sciences* |
| *Geological Sciences #5008* | | |
| *M. Royhan Gani* | | |
| ***Is this an online program***?  Yes  No | Please make sure the Program Learning Outcomes listed match those in CourseLeaf. Indicate verification here  Yes, they match! (If they don’t match, explain on this page under **Assessment Cycle)** | |

**\*\*\* Please include Curriculum Map as part of this document (at the end), NOT as a separate file.**

|  |  |  |  |
| --- | --- | --- | --- |
| ***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 able to apply fundamental geological principles in solving problems. | | | |
| **Instrument 1** | Assurance of Student Learning (ASL) exam administered in the capstone GEOL 499 course (Professional Preparation). | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | | **Met** | **Not Met** |
| **Program 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** | Assurance of Student Learning (ASL) exam administered in the capstone GEOL 499 course (Professional Preparation). | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 2.** | | **Met** | **Not Met** |
| **Program Student Learning Outcome 3:**  Students will be able to demonstrate an understanding of current societal issues related to earth science. | | | |
| **Instrument 1** | Assurance of Student Learning (ASL) exam administered in the capstone GEOL 499 course (Professional Preparation). | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 3.** | | **Met** | **Not Met** |
| **Assessment Cycle Plan:** | | | |
| The goals for all three Student Learning Outcomes (SLOs) were met, indicating a successful fourth-year implementation of the ASL exam developed by the faculty of the Geological Sciences program. As with any new assessment, adjustments and re-evaluations will likely be necessary as more data is collected in the future. Last year, we changed our curriculum by combining GEOL 330 (Mineralogy) and GEOL 350 (Petrology) into a single course. Consequently, for this assessment cycle, we modified the questions related to Mineralogy and Petrology to reflect this change. The ASL exam data suggests that students slightly improved their scores in the combined questions on Mineralogy and Petrology compared to last year.  The assessment will be used again in the 2024-25 academic year. Although the targets and criteria for student success remained the same as last year, we plan to set higher targets and/or criteria for student success next year. Average scores for individual courses will also be analyzed for quality control. Re-evaluation, if necessary, will occur as more data is collected. The timeline for the next academic year will remain unchanged. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Program Student Learning Outcome 1** | | | | | |
| **Program Student Learning Outcome** | Students will be able to apply fundamental geological principles in solving problems. | | | | |
| **Measurement Instrument 1** | Direct measurement:  In the final senior year, all graduating students must take the capstone course, GEOL 499 Professional Preparation. As part of this course, students take a comprehensive ASL exam, which consists of 25 questions in total, combining short-answer and multiple-choice formats. This exam is not part of the course grading and is specifically designed to assess the three SLOs. In the ASL exam, there are 10 questions related to SLO 1, which represent key concepts from the five core courses in the Geological Sciences B.S. degree curriculum. | | | | |
| **Criteria for Student Success** | A student should score at least 60% on the SLO 1 part of the ASL exam. | | | | |
| **Program Success Target for this Measurement** | | 70% of students will have scored 60% on the SLO 1 part of the ASL exam. | **Percent of Program Achieving Target** | 75% of students achieved the target. | |
| **Methods** | GEOL 499 was offered in Fall 2023. All students (N = 8) enrolled in the course completed the ASL exam, which was scored by the instructor of record. | | | | |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | | | | **Met** | **Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** | | | | | |
| After losing the expert faculty member who previously taught both Mineralogy and Petrology, our students struggled in these two courses. Last year, we combined Mineralogy and Petrology into a single course, and it's encouraging to see slightly improved ASL scores for this merged course. We plan to continue revamping this course to address current societal needs, specifically in critical mineral mapping and exploration.  Starting last year, we began offering all upper-level GEOL core courses every other year instead of annually. This change has posed some challenges, particularly for transfer students, in sequencing courses to ensure timely graduation. However, we’ve made consistent improvements over the past several semesters. Our goal is to ensure that all majors complete their core courses before taking the GEOL 499 Professional Preparation course, where the ASL exam is administered. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Program Student Learning Outcome 2** | | | | | |
| **Program 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** | Direct measurement:  In the final senior year, all graduating students must take the capstone course, GEOL 499 Professional Preparation. As part of this course, students take a comprehensive ASL exam, which consists of 25 questions in total, combining short-answer and multiple-choice formats. This exam is not part of the course grading and is specifically designed to assess the three SLOs. In the ASL exam, there are 10 questions related to SLO 1, which represent key concepts from the five core courses in the Geological Sciences B.S. degree curriculum. | | | | |
| **Criteria for Student Success** | A student should score at least 60% on the SLO 2 part of the ASL exam. | | | | |
| **Program Success Target for this Measurement** | | 70% of students will have scored 60% on the SLO 2 part of the ASL exam. | **Percent of Program Achieving Target** | 87% of students achieved the target. | |
| **Methods** | GEOL 499 was offered in Fall 2023. All students (N = 8) enrolled in the course completed the ASL exam, which was scored by the instructor of record. | | | | |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.** | | | | **Met** | **Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** | | | | | |
| After losing the expert faculty member who previously taught both Mineralogy and Petrology, our students struggled in these two courses. Last year, we combined Mineralogy and Petrology into a single course, and it's encouraging to see slightly improved ASL scores for this merged course. We plan to continue revamping this course to address current societal needs, specifically in critical mineral mapping and exploration.  Starting last year, we began offering all upper-level GEOL core courses every other year instead of annually. This change has posed some challenges, particularly for transfer students, in sequencing courses to ensure timely graduation. However, we've made consistent improvements over the past several semesters. Our goal is to ensure that all majors complete their core courses before taking the GEOL 499 Professional Preparation course, where the ASL exam is administered. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Program Student Learning Outcome 3** | | | | | |
| **Program Student Learning Outcome** | Students will be able to demonstrate an understanding of current societal issues related to earth science. | | | | |
| **Measurement Instrument 1** | Direct measurement:  In the final senior year, all graduating students must take the capstone course, GEOL 499 Professional Preparation. As part of this course, students take a comprehensive ASL exam, which consists of 25 questions in total, combining short-answer and multiple-choice formats. This exam is not part of the course grading and is specifically designed to assess the three SLOs. In the ASL exam, there are 5 questions related to SLO 1, which represent key concepts from the five core courses in the Geological Sciences B.S. degree curriculum. | | | | |
| **Criteria for Student Success** | A student should score at least 60% on the SLO 3 part of the ASL exam. | | | | |
| **Program Success Target for this Measurement** | | 70% of students will have scored 60% on the SLO 3 part of the ASL exam. | **Percent of Program Achieving Target** | 87% of students achieved the target. | |
| **Methods** | GEOL 499 was offered in Fall 2023. All students (N = 8) enrolled in the course completed the ASL exam, which was scored by the instructor of record. | | | | |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | | | | **Met** | **Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** | | | | | |
| After losing the expert faculty member who previously taught both Mineralogy and Petrology, our students struggled in these two courses. Last year, we combined Mineralogy and Petrology into a single course, and it's encouraging to see slightly improved ASL scores for this merged course. We plan to continue revamping this course to address current societal needs, specifically in critical mineral mapping and exploration.  Starting last year, we began offering all upper-level GEOL core courses every other year instead of annually. This change has posed some challenges, particularly for transfer students, in sequencing courses to ensure timely graduation. However, we've made consistent improvements over the past several semesters. Our goal is to ensure that all majors complete their core courses before taking the GEOL 499 Professional Preparation course, where the ASL exam is administered. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CURRICULUM MAP** | |  |  |  |  |
|  |  |  |  |  |  |
| **Program name:** | Geological Sciences (#5008) - Geology track | | |  |  |
| **Department:** | Earth, Environmental, and Atmospheric Sciences | | |  |  |
| **College:** | Ogden College of Science and Engineering | | |  |  |
| **Contact person:** | M. Royhan Gani | | |  |  |
| **Email:** | royhan.gani@wku.edu | | |  |  |
|  |  |  |  |  |  |
| **KEY:** | |  |  |  |  |
| **I = Introduced** | |  |  |  |  |
| **R = Reinforced/Developed** | |  |  |  |  |
| **M = Mastered** | |  |  |  |  |
| **A = Assessed** | |  |  |  |  |
|  |  |  | **Learning Outcomes** |  |  |
|  |  |  | **LO1:** | **LO2:** | **LO3:** |
|  |  |  | Apply fundamental geological principles in solving problems. | Recognize and articulate the integrative nature and deep-time connection of various earth system components. | Demonstrate an understanding of current societal issues related to earth science. |
| **Course Subject** | **Number** | **Course Title** |  |  |  |
| GEOL | 111 | The Earth | I | I | I |
| GEOL | 112 | Earth’s Past & Future | I | I | I |
| GEOL | 113 | Earth Lab | I | I | I |
| GEOL | 114 | Earth’s Past & Future Lab | I | I | I |
| GEOL | 350 | Mineralogy & Petrology | R/M | R | R |
| GEOL | 360 | Sedimentology & Stratigraphy | R/M | R | R |
| GEOL | 380 | Field Technique | R | R |  |
| GEOL | 408 | Structural Geology | R/M | R |  |
| GEOL | 499 | Professional Preparation | A | M/A | M/A |
|  |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CURRICULUM MAP** | |  |  |  |  |
|  |  |  |  |  |  |
| **Program name:** | Geological Sciences (#5008) - Environmental Earth Science track | | |  |  |
| **Department:** | Earth, Environmental, and Atmospheric Sciences | | |  |  |
| **College:** | Ogden College of Science and Engineering | | |  |  |
| **Contact person:** | M. Royhan Gani | | |  |  |
| **Email:** | royhan.gani@wku.edu | | |  |  |
|  |  |  |  |  |  |
| **KEY:** | |  |  |  |  |
| **I = Introduced** | |  |  |  |  |
| **R = Reinforced/Developed** | |  |  |  |  |
| **M = Mastered** | |  |  |  |  |
| **A = Assessed** | |  |  |  |  |
|  |  |  | **Learning Outcomes** |  |  |
|  |  |  | **LO1:** | **LO2:** | **LO3:** |
|  |  |  | Apply fundamental geological principles in solving problems. | Recognize and articulate the integrative nature and deep-time connection of various earth system components. | Demonstrate an understanding of current societal issues related to earth science. |
| **Course Subject** | **Number** | **Course Title** |  |  |  |
| GEOL | 111 | The Earth | I | I | I |
| GEOL | 112 | Earth’s Past & Future | I | I | I |
| GEOL | 113 | Earth Lab | I | I | I |
| GEOL | 114 | Earth’s Past & Future Lab | I | I | I |
| GEOL | 250 | Environmental Geology | I | R | R |
| GEOL | 301 | Earth's Climate in Time | I | R | R |
| GEOL | 310 | Global Hydrology | R |  | R |
| GEOL | 350 | Mineralogy & Petrology | R/M | R | R |
| GEOL | 360 | Sedimentology & Stratigraphy | R/M | R | R |
| GEOL | 408 | Structural Geology | R/M | R |  |
| GEOL | 415 | Applied Environmental Geology | R/M | R | R/M |
| GEOL | 420 | Geomorphology | R | R/M | R |
| GEOL | 499 | Professional Preparation | A | M/A | M/A |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CURRICULUM MAP** | |  |  |  |  |
|  |  |  |  |  |  |
| **Program name:** | Geological Sciences (#5008) - General track | | |  |  |
| **Department:** | Earth, Environmental, and Atmospheric Sciences | | |  |  |
| **College:** | Ogden College of Science and Engineering | | |  |  |
| **Contact person:** | M. Royhan Gani | | |  |  |
| **Email:** | royhan.gani@wku.edu | | |  |  |
|  |  |  |  |  |  |
| **KEY:** | |  |  |  |  |
| **I = Introduced** | |  |  |  |  |
| **R = Reinforced/Developed** | |  |  |  |  |
| **M = Mastered** | |  |  |  |  |
| **A = Assessed** | |  |  |  |  |
|  |  |  | **Learning Outcomes** |  |  |
|  |  |  | **LO1:** | **LO2:** | **LO3:** |
|  |  |  | Apply fundamental geological principles in solving problems. | Recognize and articulate the integrative nature and deep-time connection of various earth system components. | Demonstrate an understanding of current societal issues related to earth science. |
| **Course Subject** | **Number** | **Course Title** |  |  |  |
| GEOL | 111 | The Earth | I | I | I |
| GEOL | 112 | Earth’s Past & Future | I | I | I |
| GEOL | 113 | Earth Lab | I | I | I |
| GEOL | 114 | Earth’s Past & Future Lab | I | I | I |
| GEOL | 350 | Mineralogy & Petrology | R/M | R | R |
| GEOL | 360 | Sedimentology & Stratigraphy | R/M | R | R |
| GEOL | 408 | Structural Geology | R/M | R |  |
| GEOL | 499 | Professional Preparation | A | M/A | M/A |