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| **Assurance of Student Learning Report**  **2020-2021** | |
| *Ogden College of Science and Engineering* | *Department of Biology* |
| *Biology (0493)* | |
| *Jarrett Johnson, Program Coordinator; Kerrie McDaniel, Doug McElroy, Assessment Coordinators* | |

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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.*** | | | |
| 1. **Student Learning Outcome 1:** Graduates will demonstrate a level of biological content knowledge appropriate to their degree level. | | | |
| **Instrument 1** | Biology Assessment Exam | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | | **Met** | **Not Met** |
| **Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)** | | | |
| During 2020-21, the Department of Biology Program Review/Assessment Committee (the ‘Committee’) developed and program faculty adopted substantially revised student learning outcomes and means of assessment for this and all other programs. This overhaul was driven by the recognition from prior assessments that the previous SLOs and/or their means of assermment were not in all cases direct measures of student learning and/or did not provide sufficient direct evidence to inform program improvement. In addition, recent adoption of a Biology Process Course requirement for 3 of 4 undergraduate programs necessitated significant modification to our means of assessment of the prior process-related SLO.  This is a 15 credit-hour graduate certificate program focused on building students’ content knowledge in support of their primary career field (e.g., K-12 instruction) for purposes of professional training or accreditation. As such, SLOs related to research ethics and science process (assessed in other departmental major programs at the undergraduate and graduate level) are not assessed in this program.  The specific action steps taken based on prior assessments were: (1) to develop and approve revised SLOs for all programs; (2) develop a new assessment instrument for SLO1 aligned with the curriculum core; (3) develop a new five-year plan for program assessment; (4) generate a fully-developed curriculum map for all SLOs; and (5) collect baseline data for all SLOs.  Specific follow-up items for 2021-22 per our five-year assessment plan are to: (1) assess 2020-21 artifacts for all SLOs and analyze results from those assessments; (2) develop and approve recommendations for program improvements based on assessment findings; and (3) evaluate new assessments instruments and processes for collecting assessment data. | | | |

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| **Student Learning Outcome 1** | | | | | |
| **Student Learning Outcome** | **Graduates will demonstrate a level of biological content knowledge appropriate to their degree level.** | | | | |
| **Measurement Instrument 1** | **Biology Assessment Exam**  The Biology Assessment Exam is an instrument newly-developed in 2020-21 designed to assess content knowledge within the program discipline. The exam is constructed around 12 vignettes, 2 each representing the six major areas of emphasis in our core curriculum (Cells, Metabolism, Genetics, Ecology, Evolution, Diversity). These major areas are aligned with restrictive elective core choices (BIOL 532, BIOL 534, or BIOL 545, and BIOL BIOL 411G, BIOL 446G, or BIOL 495G). Free elective courses provide students the opportunity to further master these topics in more specific contexts aligned with their individual professional interests.  Within each area of emphasis, there are 2 vignettes that are associated with 9 multiple-choice questions. Three (3) questions each test student content knowledge at the introductory, developing, and mastery level. In each area, several questions require interpretation of tables and/or figures, and assess students’ ability to apply the scientific process. This exam design allows for redundant assessment of knowledge by area of emphasis as well as mastery level; in addition, it provides the ability to carry out a meta-analysis of higher-order knowledge and skills such as correct interpretation of data and application of the scientific process.  The exam is given either electronically or in-person as part of BIOL 500, our required program course that is taken by students during their first semester at WKU. This is an appropriate time to deliver this assessment, as performance on the assessment exam is used by the program and a student’s graduate advisor as a basis for determining the extent and nature of any remedial coursework that will be required in order for a student to complete the program, as well as design the student’s Program of Study. | | | | |
| **Criteria for Student Success** | Students will score at least 60% or higher, with the score on Introductory level items at least 60%. | | | | |
| **Program Success Target for this Measurement** | | At least 75% of students will attain the criterion level of success. | **Percent of Program Achieving Target** | N/A – data to be assessed and reported in 2021-22 report | |
| **Methods** | All students enrolled in the BIOL 500 course are intended to be assessed. This will generate a sample size of 5-10 each assessment year. This is a relatively new program, so the projected number of graduates has not yet been fully realized. | | | | |
| **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.) | | | | | |
| 1. The Committee secured approval of this SLO and means of assessment from program faculty. (Fall 2020)  2. The Committee developed the new Biology Assessment Exam as the assessment instrument. (Fall 2020, Spring 2021)  3. The Committee worked in conjunction with the program coordinator to prepare to deliver the assessment exam in Fall 2021. (Spring 2021)  4. The Committee evaluated the new assessment exam and its implementation. (Spring 2021)  5. The Committee generated a fully-developed curriculum map for this SLO. (Spring 2021). | | | | | |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) | | | | | |
| 1. The Committee will analyze 2020-21 assessment results and develop recommendations for program improvement to bring to program faculty. (Fall 2021)  2. The Committee will move from an in-person to electronic delivery format for the assessment exam. This electronic delivery system will be piloted during the 2021-22 AY, in preparation for the collection of mid-cycle assessment data during 2022-23, for inclusion in the 2023/24 report.  3. Program faculty will review/revise and approve specific program improvement actions to be undertaken based on assessment findings. (Spring 2022). | | | | | |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) | | | | | |
| Baseline assessment results and recommendations for program improvement will be reported as part of the 2021-22 report. The SLO will then be assessed on an alternating year basis, with next (mid-cycle) results and recommendations included in the 2023/24 report. To allow for longitudinal comparison, the same assessment instrument will be used. Assessments will be delivered by BIOL 500 instructors and analyzed by the Department of Biology Program Review/Assessment Committee. | | | | | |