

Assessment: Program Four Column



Program (ALP) - Biology MS

College or Division: Arts and Sciences

Department: Biology, Geology, and Physical Sciences

Assessment Coordinator: Dr. Chris Ritzi

Statement of Purpose: Students must successfully complete either a) 30 semester credit hours of coursework in biology and complete a thesis, b) 36 semester credit hours of coursework in biology and complete a mini-thesis (typically a one-semester project), or c) 36 semester credit hours of coursework in biology and a written comprehensive exam in order to earn the MS degree. Additionally, all options require completion of a comprehensive oral examination before a degree is awarded. The graduate biology curriculum is designed to meet each learning outcome via work in the introductory courses (such as BIOL 5305 Techniques of Scientific Research) and expanded in the other advanced discipline courses. All courses are designed to train students in their respective areas. As with our undergraduate program, we emphasize the importance of field and laboratory experiences, encouraging our students with outdoor learning opportunities, modern lab techniques, and field experiences to enhance the learning environment. The orientation of the program is toward an organism approach to the sciences, emphasizing integrated ecological and co-evolutionary studies of plants and animals through field work in the Chihuahuan Desert region. We seek to provide broad training in most aspects of modern biology, as well as helping to prepare students for advanced specialty disciplines such as pre-medical and allied health areas.

Annual Updates

2018 - 2019

Evidence of Improvement from Previous Assessment Cycle: The SLO's implemented back in 2014-15 have aimed to address the understanding and utilization of the scientific method, from the designing of studies, through the implementation of research, to the final dissemination of the findings to others. It was determined at that time that this approach would best prepare our Master's graduates for the field of Biology, regardless of sub discipline. Based on the current 2018-19 assessment cycle, seven of the eight assessment objectives were met. Additionally, of the seven objective assessments that were met, three of the seven (SLO2a, SLO3b, and SLO4b) showed improvement from the previous assessment cycle. Additionally, the one SLO not met, did show improvement from the last cycle, and less than 1% from meeting the goal of 80%. This year also successfully saw all assessments being properly administered, which was the third successful implementation of these learning objectives into our program assessment process. This is encouraging in that the changes that have been made thus far have been resulting in improvement of student success. Overall, there has been marked improvement compared to the 2015-16 cycle, with action plans in place to continue this trend of success.

Review History: Reviewer #1 Name, Date, and Comments: Dr. Dan Foley, August 1, 2019

Review History: Reviewer #2 Name, Date, and Comments: Dr. Liz Measures, August 1, 2019

Review History: Reviewer #3 Name, Date, and Comments: Dr. Eric Funasaki, August 1, 2019

Student Learning Outcomes

Assessment Methods

Results

Use of Results

SLO 1 - The student will be able to

Written Assignment -

Reporting Period: 2018 - 2019

Use of Results: It is encouraging

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
<p>understand and implement scientific methodology. Outcome Status: Active</p>	<p>a. Instructor will assess students' performance on this learning outcome via a technical scientific paper in Biology 5305 – Techniques of Scientific Research course. Target: The targeted level of performance for SLO 1 is a minimum of an 80% mean student score.</p> <p>Departmental Comprehensive Exam -</p> <p>b. Faculty will assess student performance on this learning outcome using the Masters Defense Oral/Written Examination. Investigative questions pertaining to how one would develop a scientific study are asked during either the written or oral stage of the defense, as appropriate. Students are scored as per a rubric during the comprehensive oral for thesis students or the Comprehensive written and oral for non-thesis graduate students. Target: The targeted level of performance for SLO 1 is a minimum of an 80% mean student score.</p>	<p>Conclusion: Target Not Met Of the 9 students completing this assignment, they scored a collective 79.1% in terms of the use and implementation of the scientific method towards describing how to conduct a study. This was based on a score of 19.778 out of 25 points. This is just shy of meeting the goal of 80%. (05/24/2019)</p> <p>Reporting Period: 2018 - 2019 Conclusion: Target Met Of the one student that successfully completed the comprehensive program exams, we had a score of 85% toward the understanding and implementation of the scientific method. This meet the goal of 80%. There were 3 other students that attempted the comprehensive exams this year that were not successful, but their score are not to be included to avoid psuedoreplication when they retest and have their scores applied toward this rubric. (05/27/2019)</p>	<p>that we are continuing to approach the 80% goal for this objective. Plans are to continue with current efforts to explain various methodologies and logistical aspects to students before this assignment, to help them more realistically assess how to go about testing for a particular hypothesis. (05/24/2019)</p> <p>Use of Results: The one student who successfully completed the oral exam was the only one of the four who attempted this past year who took part in thesis drills and original practice sessions. The other three were advised by a faculty member who did not do this sort of review, and did not assess to see if the students were actually prepared for the oral exams. This illustrates the value of oral exam preparation and involvement by faculty quizzing and practice. (05/27/2019)</p>
<p>SLO 2 - The student will be able to utilize field techniques toward addressing scientific questions. Outcome Status: Active</p>	<p>Project -</p> <p>a. Faculty will assess student performance on this learning outcome using a Field Project Assessment. Students are scored based on performance of field tasks in either Biology 5601 – Field Botany or Biology 5602 – Field Zoology. Techniques are documented in</p>	<p>Reporting Period: 2018 - 2019 Conclusion: Target Met Of the 3 students who took Field Zoology during the past summer, they collectively scored a 90% for their field notebook assignments. Additionally, there was one graduate student who took the arachnid field class during the same summer, who scored a 95% on her field journal assessment and collection methods. This gave a total of 91.25% for graduate field methodology, which exceeds our</p>	<p>Use of Results: Based on the early results for this group of students, they appear well prepared for understanding field methodologies. It should be taken with caution; however, as this is a very small sample of students and not a very statistically large sampling. (05/24/2019)</p>

Student Learning Outcomes	Assessment Methods	Results	Use of Results
	<p>student field journals, and scored in relation to technical preformed ability at the end of each respective course.</p> <p>Target: The targeted level of performance for SLO 2 is a minimum of an 80% mean student score.</p> <p>Departmental Comprehensive Exam -</p> <p>b. Faculty will assess student performance on this learning outcome using the Masters Defense Oral/Written Examination. Investigative questions pertaining to data collection and sampling methods are asked during either the written or oral stage of the defense, as appropriate. Students are scored as per a rubric during the comprehensive oral for thesis students or the comprehensive written and oral for non-thesis graduate students.</p> <p>Target: The targeted level of performance for SLO 2 is a minimum of an 80% mean student score.</p>	<p>goal. (05/24/2019)</p> <p>Reporting Period: 2018 - 2019</p> <p>Conclusion: Target Met</p> <p>Of the one student who completed the oral exams this assessment cycle, a score of 95% was achieved toward the utilization and understanding of field techniques. This meets the objective set for this goal. (05/27/2019)</p>	<p>Use of Results: The one student who successfully completed the oral exam was the only one of the four who attempted this past year who took part in thesis drills and original practice sessions. The other three were advised by a faculty member who did not do this sort of review, and did not assess to see if the students were actually prepared for the oral exams. This illustrates the value of oral exam preparation and involvement by faculty quizzing and practice. (05/27/2019)</p>
<p>SLO 3 - The student will be able to utilize statistics toward the analysis of data within the discipline.</p> <p>Outcome Status: Active</p>	<p>Exam/Quiz - In Course -</p> <p>a. Faculty will assess student performance on this learning outcome using a summative examination administered at end of the semester covering a variety of statistical methods in Biology 5316 – Biostatistical Analysis I.</p> <p>Target: The targeted level of performance for SLO 3 is a minimum of an 80% mean student score.</p>	<p>Reporting Period: 2018 - 2019</p> <p>Conclusion: Target Met</p> <p>Of the 7 biology Masters students enrolled in the course this cycle, they scored an average of 86%, exceeding the program goal of 80%. (05/27/2019)</p>	<p>Use of Results: The students exceeded the goal set for this objective, indicating that the current method of instructing biostats is doing a adequate job preparing them to understand and use stats toward their thesis research. (05/27/2019)</p>
	<p>Departmental Comprehensive</p>	<p>Reporting Period: 2018 - 2019</p>	<p>Use of Results: The one student</p>

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
	<p>Exam - b. Faculty will assess student performance on this learning outcome using the Masters Defense Oral/Written Examination. Statistics questions are asked during either the written or oral stage of the defense, as appropriate. Students are scored as per a rubric during the comprehensive oral for thesis students or the Comprehensive written and oral for non-thesis graduate students. Target: The targeted level of performance for SLO 3 is a minimum of an 80% mean student score.</p>	<p>Conclusion: Target Met Of the one student who completed the oral exams this cycle, a score of 95% was achieved. This more than met the assessment. It should be noted that 3 other students attempted the oral exams this cycle, but they are not included in this assessment to avoid pseudoreplication when they retest later. (05/27/2019)</p>	<p>who successfully completed the oral exam was the only one of the four who attempted this past year who took part in thesis drills and original practice sessions. The other three were advised by a faculty member who did not do this sort of review, and did not assess to see if the students were actually prepared for the oral exams. This illustrates the value of oral exam preparation and involvement by faculty quizzing and practice. (05/27/2019)</p>
<p>SLO 4 - The student will be able to effectively disseminate scientific findings using both written and oral communication. Outcome Status: Active</p>	<p>Presentation/Performance - a. Faculty will assess student performance on this learning outcome using oral presentations and written papers in the graduate introductory course, Biology 5305 – Techniques of Scientific Research. A rubric is used to score each and the scores are averaged. Target: The targeted level of performance for SLO 4 is a minimum of an 80% mean student score.</p>	<p>Reporting Period: 2018 - 2019 Conclusion: Target Met In the Biol 5305 Techniques of Scientific Research course, nine students completed the written proposal and oral presentation project and scored an average of 81%. This barely meets the set goal of 80% set for this objective. (05/27/2019)</p>	<p>Use of Results: The modifications of the techniques class appear to be beneficial, in which we have met the objective several years now. That said, the scores have been on the low side of passing our goal. Efforts will be made in the Techniques review and editing process to better instill the importance of written communication and why students should work to improve their written skills. (05/27/2019)</p>
	<p>Departmental Comprehensive Exam - b. Faculty will assess student performance on this learning outcome using the Masters Defense Oral/Written Examination. Students' performance is assessed during either the written or oral stage of the defense, as appropriate.</p>	<p>Reporting Period: 2018 - 2019 Conclusion: Target Met Of the one student who successfully completed the oral exams, a score of 85% was achieved. This meets the set goal of 80% for this objective. (05/27/2019)</p>	<p>Use of Results: The one student who successfully completed the oral exam was the only one of the four who attempted this past year who took part in thesis drills and original practice sessions. The other three were advised by a faculty member who did not do this sort of review, and did not</p>

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Students are scored as per a rubric during the comprehensive oral for thesis students or the comprehensive written and oral for non-thesis graduate students.
Target: The targeted level of performance for SLO 4 is a minimum of an 80% mean student score.

assess to see if the students were actually prepared for the oral exams. This illustrates the value of oral exam preparation and involvement by faculty quizzing and practice. (05/27/2019)