# Annual Academic Assessment Report Cover Sheet

**Assessment reports are due the 1st Wednesday after the Fall Term**

Email to: assessment@unlv.edu

---

## Program Information:

<table>
<thead>
<tr>
<th>Program Assessed</th>
<th>Geology Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Geoscience</td>
</tr>
<tr>
<td>College</td>
<td>Sciences</td>
</tr>
<tr>
<td>Department Chair</td>
<td>Terry Spell</td>
</tr>
<tr>
<td>Assessment Coordinator</td>
<td>Brenda Buck</td>
</tr>
<tr>
<td>Date Submitted</td>
<td>December 7, 2017</td>
</tr>
</tbody>
</table>

## Contact Person for This Report

<table>
<thead>
<tr>
<th>Name</th>
<th>Brenda Buck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>895-1694</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:buckb@unlv.nevada.edu">buckb@unlv.nevada.edu</a></td>
</tr>
</tbody>
</table>

---

Please attach a narrative (not to exceed 4 pages, excluding appendices) addressing the following:

- What are the student learning outcomes? Please provide a numbered list.
- Which learning outcomes were assessed?
- How were they assessed? (Programs must use at least one direct assessment of student learning.)
- Undergraduate programs should assess at least one University Undergraduate Learning Outcome (UULO) each year, which may or may not overlap with a program learning outcome.
- Graduate programs should assess at least one outcome related to one of the following graduate level requirements each year:
  - student engagement in research, scholarship, creative expression and/or appropriate high-level professional practice.
  - activities requiring originality, critical analysis and expertise.
  - the development of extensive knowledge in the field under study.
- What was learned from the assessment results?
- How did the program respond to what was learned?

Please limit the narrative portion of your report to no more than four pages. You may attach appendices with data, tables, charts, or other materials as needed. Please explain the relevant conclusions from any appendices in your narrative. Please contact the Office of Academic Assessment if you have questions or need assistance.
Ph.D. Geoscience Program  
Learning Outcomes

1. Demonstrate an understanding of scientific ethics and appreciation for scientific inquiry/scientific method
2. Demonstrate the ability to successfully present the results of a scientific inquiry in oral format (either poster or oral presentation).
3. Demonstrate the ability to
   (1) Search existing scientific literature for work relevant to a specific problem in at least one field of specialization;
   (2) Create a research problem by identifying questions and defining and testing hypotheses;
   (3) Design and complete substantial independent research project.
4. Demonstrate the ability to prepare publications and submit them to peer-reviewed journals.

- Graduate programs should assess at least one outcome related to one of the following graduate level requirements each year:
  o student engagement in research, scholarship, creative expression and/or appropriate high-level professional practice.
  o activities requiring originality, critical analysis and expertise.
  o the development of extensive knowledge in the field under study.

New Assessment Matrices and Measurements Developed

During the Fall 2016-Spring 2017 (and summer 2017) academic year, the geoscience faculty held several meetings including a faculty retreat, in which assessment was discussed. We re-wrote/edited the Learning Objectives for the Geology Ph.D., and we re-did all the assessment matrices for this program. Major changes include the development of at least one direct, quantitative measurement and at least one indirect, qualitative measurement for each of our learning objectives. These new assessments have been implemented in this assessment report.
Assessment

Learning Assessment #2 and #3 (partial) and the graduate level requirement of student engagement in research, scholarship, creative expression and/or appropriate high level professional practice are assessed through the following measures:

GEOL 795 Poster Creation and Presentation at Geosymposium (Direct, Quantitative)

Two Ph.D. students presented their research in an oral format using a poster they created as part of an assignment in GEOL 795. These presentations were delivered to all attendees at the annual UNLV Geosymposium (attendees include numerous representatives from local, regional and national companies, UNLV faculty and students, and sometimes students from other regional universities). Both students performed satisfactory on this assessment (both received A’s).

GEOL 795 Faculty Assessments (Indirect, Qualitative)

The faculty assessment of the performance described above indicated that the students did an excellent job of searching existing literature to determine and define their specific research problem (partial learning objective #3), and successfully presented this work in an oral format at a meeting of other scientists (learning objective #2).

Presentation at Geosymposium (not part of GEOL 795) (Indirect, Qualitative)

A separate faculty assessment of Ph.D. students also occurred at the annual Geosymposium meeting, where 2 different Ph.D. students presented an oral talk of their research (thus different from the poster presentations described above). Faculty indicated that both presentations were satisfactory, however one student could have improved his presentation by better explaining the significance of his research to a general audience. His advisor plans to work with him to help him better learn to communicate more effectively with audiences that have vastly different educational levels and backgrounds.

Ph.D. Dissertation Proposal Defense

Faculty assessment of a Ph.D. dissertation proposal defense recorded the following observations: The student successful defended his proposal. Both the oral presentation and his ability to respond to the questions posed were exemplary. This student has shown significant improvement in his ability to completely and accurately present his work. Over the course of preparation in advance of scheduling his proposal defense, the student was able to refine his research project, identifying three substantive but doable research questions and associated hypotheses. In addition, his identified methods were approved by his committee with notes of caution to not go beyond the limits of the proposal out of concern for the scale of work this project was requiring. The results of this proposal defense were successful, having received approval and notes of
encouragement to continue developing his academic approach as was noted over the past semester.

**Student Progress through the Ph.D. Degree Program**

This is the second year in a row where we report that several Ph.D. students are not progressing satisfactorily in their program: they are late in filing paperwork and more importantly late in taking their comprehensive exams and defending their proposals (6 students of 15 earned an unsatisfactory evaluation due to these problems, which could lead to loss of their funding). Although this is not a traditional method of assessment, it is an important indicator that our students are not progressing in a timely manner which affects not only their success but our entire program since funding is so limited and continuing students on additional funding past year 4 prevents us from admitting new students. Our faculty have significant concerns about these issues, which we began to address this past year by holding several faculty meetings to discuss changes in our program that would better help students progress in a satisfactory manner leading to increased student success. We learned that giving increased unsatisfactory ratings to students did increase their compliance at meeting these deadlines. We also have developed recommendations to change our Ph.D. program schedule and methodology to help students complete their milestones earlier (proposal defenses, and comprehensive exams), so that students can be better prepared and focused on the work needed to successfully complete their Ph.D. These recommendations were discussed this past year but they have not yet been agreed to or implemented.

**Summary**

Although new assessment measures were developed this past year, their implementation, particularly for the Ph.D. program were spotty. Some of this was caused by personnel shifting, including a new graduate coordinator, and missing data that could have been useful in assessing this program. We have implemented some new procedures that we hope will allow us to obtain more data for next year’s assessment.

Overall, our Ph.D. program seems to have 2 different sets of students: Those who are progressing and doing well and those who are slow to achieve milestones. The former group of students are highly engaged in their research, and are successfully demonstrating their ability to research existing literature, develop hypotheses, carry out their investigations and communicate their results with others. The second category includes students who are slow at meeting their deadlines for proposal defenses and comprehensive exams. Most of these students have improved after receiving ‘unsatisfactory’ performance evaluations. For the most part, these students are still performing in a satisfactory manner, but they are much slower in achieving satisfactory outcomes and our department is focused on finding ways to improve upon this. Slow progression through the program hurts both the students and the university and is something we are committed to improving.
Geoscience remains one of the top ranked programs at UNLV, with a national ranking in the top 100 university Geology programs. The Hydrogeology Program was also ranked by the largest groundwater association in the world as in the top 100 programs in North America.