

Student Learning Outcomes Assessment Summary

Geoscience, Ph.D.

College of Natural Science and Mathematics

AY 2016-18

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1. Assessment information collected

- A. Technical ability and knowledge:** Lists of peer reviewed publications, abstracts, and conference presentations are compiled and reviewed.
- B. MS graduates have performed research that contributes to their field:**
Lists of peer reviewed journal publications. Number of students with thesis chapters prepared for publication in peer reviewed literature.
- C. Written and oral communication skills consistent with professional standards:** Written thesis proposals are assessed with a rubric. Thesis defense quality is assessed by faculty present using an oral presentation rubric. The final thesis is assessed by the Department Chair using a written work rubric.
- D. MS graduates obtain employment or continue education in their field:**
Graduate exit interview. American Geological Institute (AGI) student exit survey. Additional input from annual student feedback seminar. Faculty survey of recent graduate students.

2. Conclusions drawn from the information summarized above

- A.** Information on student publications and conference presentations is self-reported by graduate students in the department (Table 1). Of the 1 student who reported during the AY16-18 period, 1 student (100%) reported at least one peer-reviewed publication and 1 student (100%) reported a published conference abstract. One student (100%) also reported receiving 3 grants. Given that this information is self-reported, these numbers indicate that most PhD Geology students develop adequate technical ability and knowledge to present their work at national and international professional meetings by the end of their program. Some students are even able to prepare manuscripts for publication in peer-reviewed literature.
- B.** As indicated above, 100% of PhD Geology students who reported had published a conference abstract and given an oral or poster presentation at a national or international professional meeting, and also reported a publication in a peer-reviewed journal. This indicates that PhD Geology students are producing research that is making contributions to their field. Furthermore, of the 3 PhD Geology students who graduated in AY14-16, all students (100%) prepared their theses as a set of manuscripts which were either published, submitted for publication at the time their thesis was submitted to the Dept. Chair for review, or were intended for submission shortly thereafter (Table 2). No PhD Geology students prepared their theses in traditional thesis format. All PhD theses were assessed by the Dept. Chair using the written work rubric. None of the theses were rated inadequate in any of the categories on the rubric. Areas that were weakest on average, although still adequate, were discussion of the significance and/or implications of the students' research (Q2), and the overall writing quality (Q13). This suggests that, although all of our students can produce a written thesis which is at least up to adequate professional standards, some continue to need assistance in framing their own research within the broader significance of a larger problem, and some have only adequate writing skills.

- C.** Written thesis proposals have not been consistently reviewed with a rubric during AY16-18. Following our last SLOA report, we adopted a written work rubric that is online and was to be used by graduate committees for evaluations of thesis proposals and completed theses. It is clear that we need a systematic method to ensure that data are entered and so we will return to paper forms handed in to the department office which will then be entered on the electronic rubric form. All theses reviewed by the Chair (Table 3) have been evaluated using the written work rubric (Table 4). Thesis defense quality has been evaluated for some students by faculty present using an oral presentation rubric (Table 5). One of 3 PhD Geology students who defended during AY14-16 were evaluated using this rubric and the student scored adequate on the overall evaluation of their presentation (Table 6). These data indicate that PhD Geology students can make at least an adequate professional oral presentation by the end of their program, and some students are making very good or excellent presentations.
- D.** Of the 3 students who graduated from the PhD Geology program in AY2016-18, 3 (100%) are employed as post-doctoral fellows (Table 7). Thus, 100% of our graduating PhD Geology students during this period have found employment within geoscience-related fields.

During this period, we reinstated our own student exit surveys (Table 8) rather than relying on a national survey conducted by the American Geological Institute (AGI). Unfortunately, we received very low participation rates for our online exit survey. Nevertheless, we can compare our own student employment data to the national survey in order to evaluate how our students measure compared with national trends. In the 2016 AGI national survey (Table 9), 57% of graduating PhD Geology students had accepted a position in a geoscience-related field, while in the 2017 survey (Table 10), 36% of graduating students had accepted a geoscience position. Our student employment data compares very favorably to these national trends, with 100% of our students placed in a geoscience-related field. As with the national survey, the majority of our students were employed by 4-year academic institutions or research institutes.

3. Curricular changes resulting from conclusions drawn above

- A.** Data from student publications and presentations indicate that students do reach an appropriate level of technical ability and knowledge by the end of the PhD Geology program. In order to better evaluate a progression of students' technical ability and knowledge as they move through the program, we are developing a check-list and series of paper forms so that students research proposals, and oral presentations at comprehensive exams are evaluated with our oral and written work rubrics.
- B.** The quality of student theses and thesis defenses is generally very good to excellent, and no students rank as inadequate in this area by graduation. The quality of theses produced clearly demonstrates that our graduates are able to identify a scientific problem, devise appropriate methods to solve it, and contribute original knowledge to their field.
- C.** Our assessment of final theses and thesis defense presentations indicates that graduating PhD Geology students have obtained communication skills that are consistent with professional standards. The future use of our written work and oral presentation rubrics will ensure that students improve upon these skills as they move through the program.
- D.** Graduates from the PhD Geology program are highly successful in finding employment within their field (100%). These results indicate that our program is successful in preparing students for future careers in geology or obtaining higher degrees.

4. Identify the faculty members involved in reaching the conclusions drawn above and agreeing upon the curricular changes resulting

Paul McCarthy, Rainer Newberry, Sarah Fowell, Elisabeth Nadin, Carl Tape

Suggested curricular changes will be voted on by all faculty at our first fall faculty meeting, August, 2018.

Tables referred to in this report can be found at:
www.uaf.edu/geology/downloads/

