Student Learning Outcomes Assessment Summary

Chemistry, M.S

College of Natural Sciences and Mathematics

2016-17 and 2017-2018

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1. Assessment information collected

We assess students at all committee meetings and defenses on a 7-point rubric. Students are assessed with respect to specific criteria and graded as deficient compared to expectations (-1), meeting expectations (0), or exceeding expectations (+1). There were six (6) anonymous forms collected in this period, and the average of all assessments is presented in the table below.

Assessment criterion	Result
1. Specific knowledge of literature	0%
2. Ability to critically analyze literature	+17%
3. Technical abilities	+33%
4. Quantitative abilities	+33%
5. General knowledge of field	0%
6. Presentation skills	+17%
7. Writing Skills	0%

The results show that the faculty feel that students are doing better than expected with respect to most of these criteria. Particularly high marks were given to "technical abilities" and "quantitative abilities". The lowest scores are on specific and general knowledge of the literature as well as writing skills, although all categories were deemed as meeting expectations.

Four M.S. students who graduated in this period all found employment in their field. One of these students was a co-author on 4 publications and a co-author on a patent. Two students currently have papers in preparation.

The M.S program in Chemistry has three possible tracks; (1) Chemistry, (2) Biochemistry & Neuroscience, and (3) Environmental Chemistry. There are currently seven (7) active M.S, students; two have a Biochemistry & Neuroscience concentration, three have an Environmental concentration and two have a Chemistry concentration.

All MS students are required to write and orally defend a research proposal by the end of their second semester. All of our students have successfully defended their research proposals at the annual committee meetings by the end of the first year.

Additionally, Environmental Chemistry M.S. students also present at the annual Environmental Chemistry Symposium held at UAF each April. M.S. students with a concentration in Biochemistry & Neuroscience present at the University of Alaska Biomedical Research conference. A total of 7 presentations by M.S. students were made during this period, which included one presentation at a national conference.

2. Conclusions drawn from the information summarized above

Our SLOA plan has four intended outcomes, which are discussed below:

1. **Technical abilities.** Students performed at a high level according to assessment form. Annual progress reports showed students had good progress and most students are working towards a publication.

2. **Problem-solving skills and contribution to field.** M.S. students typically publish on average one paper in the literature. They often present their research at regional and national conferences in the form of posters and oral presentations.

3. **Communication skills.** M.S. students successfully present research proposals at their committee meetings at the end of the first year. Both oral and written skills are being developed in these proposals. Students also present at conferences in the form of posters and oral presentations, both locally and nationally.

4. **Employment:** All students who graduated in this period are employed in this field.

3. Curricular changes resulting from conclusions drawn above

No substantial curricular changes were made. As a separate action by the department, the graduate seminar class was canceled (Chem F692), which was previously stacked with the undergraduate seminar (Chem F481 and F482). The M.S. students now are required to take either two credits of Research Presentation Techniques (Chem F691), taught by the Environmental Chemistry faculty, or two credits of Biochemistry & Neuroscience Colloquium (Chem F688) taught by the Biochemistry & Neuroscience faculty. M.S. students who are not in either of these concentrations will enroll in one of these seminar courses, depending on their interest and area of research. The subject material taught in these two courses is broadly useful in developing professional communication skills for our M.S. students.

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

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Has your SLOA plan been updated to include assessment of the program's Communication Plan, as required by Faculty Senate motion? (required for baccalaureate programs only)

Not applicable to M.S. Program.