Expected Outcome 1: Effective Oral Communication Skills
Students in M.S. degree Program will demonstrate ability to give oral presentation of their research thesis and/or current scientific literature in chemistry and biochemistry topics.

Assessment Method 1: Oral seminar presentation

Assessment Method Description
Graduate students present research or literature seminars starting from their second year of residency and once every year thereafter. Their ability to communicate scientific information is evaluated using a standard departmental evaluation form with emphasis on the following topics:

I. Adequate communication of scientific significance of research article or research work
II. Presentation of background material and importance of research article or research work
III. Knowledge of subject matter: Does the speaker exhibit a good grasp of the material presented?
IV. Clarity of presentation: Does the speaker do a good job passing on knowledge to the audience?
V. Quality of presentation (data presentation and rational conclusions)
VI. Timing: Did the speaker plan and use his/her 50 minutes wisely? Was the seminar too long, or too short?
/II. Quality of visual aids (visibility of PowerPoint slides etc.)

Findings
There were 2 students who graduated with an M.S. degree in 2013. These students did not give an oral presentation in their divisional seminars in 2013; they had given their seminars in prior years which fall outside the 2013-2014 assessment period.
How did you use findings for improvement?

The department of chemistry and biochemistry does not admit students directly into the Masters program, this program is available for those who initially enroll in the PhD program but cannot finish their PhD studies for whatever reason. Graduate faculty members usually meet to discuss the Masters program on a case by case basis as needed.

Additional Comments

Expected Outcome 2: Mastery of Fundamental Laws of Chemistry and Biochemistry

Auburn university students in the chemistry and biochemistry M.S. degree program will have mastery of advanced topics in biochemistry, analytical chemistry, physical chemistry, inorganic chemistry and organic chemistry.

Assessment Method 1: American Chemical Society Entrance Exams and Graduate Level Core Courses

Assessment Method Description

Students in the M.S. degree program take entrance exams in biochemistry, analytical chemistry, physical chemistry, inorganic chemistry and organic chemistry provided by the American Chemical Society (ACS) at the beginning of their program. From the results, they are advised accordingly on what classes they need to take to expand their knowledge in areas they have deficiencies in and they are also encouraged to learn through independent self-study.

There are 5 core graduate level courses (one course per division) that students can take depending on their performance on the entrance exams. Each division-specific core course has learning goals aligned to enable students to broaden their knowledge in those areas. Assessment of students’ mastery of these core topics was accomplished via end of semester grades which were binned under three categories: (a) student exceeds learning goal (≥90%), (b) student meets learning goal (80% - 89%) and (c) student does not meet learning goal (less than 80 %). The table shown below illustrates the core graduate courses offered in the Department of Chemistry and Biochemistry that were used for assessment.
There were 2 students who graduated with an M.S. degree in 2013 but they joined the program fall 2010. They took the above listed classes then which is outside the 2013-2014 assessment period.

**How did you use findings for improvement?**

The department of chemistry and biochemistry does not admit students directly into the Masters program, this program is available for those who initially enroll in the PhD program but cannot finish their PhD studies for whatever reason. Graduate faculty members usually meet to discuss the Masters program on a case by case basis as needed.

**Additional Comments**

**Assessment Method 2:** Cumulative Exams

**Assessment Method Description**

Students’ progress in mastery of biochemistry, analytical chemistry,
physical chemistry, inorganic chemistry and organic chemistry principles was also evaluated via cumulative exams (cumes) which are authored and graded by the graduate faculty in the Department of Chemistry and Biochemistry. Students in the M.S. degree program are expected to pass three cumes within two years of residency; Students who pass these exams within the required timeline are classified as “meets expectation” while those who don’t are classified as “do not meet expectations”.

Findings

There were 2 students who graduated with an M.S. degree in 2013 but they joined the program fall 2010. These students successfully passed the required three cumes for the master’s program within two years of residency (2010-2012) however this period is outside the 2013-2014 assessment year.

How did you use findings for improvement?

The department of chemistry and biochemistry does not admit students directly into the Masters program, this program is available for those who initially enroll in the PhD program but cannot finish their PhD studies for whatever reason. Graduate faculty members usually meet to discuss the Masters program on a case by case basis as needed.

Additional Comments

Expected Outcome 3: Practical / Technical Skills

Graduate students in the M.S. degree program will demonstrate ability to apply basic knowledge and practical theory at the forefront of each specialty area (general chemistry, inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry and biochemistry) for planning and doing scientific research.

Assessment Method 1: Masters Thesis Defense and Publications

Assessment Method Description

Graduate students in the M.S. degree program are required to defend their research work before graduation. This consists of a written dissertation report and a final oral defense presented to the thesis advisory committee members. Students are assessed on their research quality and knowledge of their Masters Thesis topic. Most often, their research work leads to publications in peer reviewed scientific journals. Ability to conduct independent research and publish this work in peer reviewed scientific journals (technical writing) is one of the criteria that we evaluate our
graduate students. Those that publish their research work in peer reviewed scientific journals as first authors are classified as “exceeds expectation” while those that are co-authors or don’t publish their research work are classified as “meets expectation”.

Findings

There were 2 students who graduated with an M.S. degree in 2013. These students successfully defended their masters thesis with one of them publishing 2 peer-reviewed research articles as a first author (exceeds expectations) which has been cited by other researchers 3 times, an indicator of how other researchers value the work done by our graduate students.

How did you use findings for improvement?

The department of chemistry and biochemistry does not admit students directly into the Masters program, this program is available for those who initially enroll in the PhD program but cannot finish their PhD studies for whatever reason. Graduate faculty members usually meet to discuss the Masters program on a case by case basis as needed.

Additional Comments