STUDENT LEARNING ASSESSMENT PROGRAM SUMMARY FORM AY 2020-2021

Degree and Program Name: M.S. in Chemistry

Submitted By: Radu F. Semeniuc, Graduate Coordinator

Please complete a separate worksheet for each academic program (major, minor) at each level (undergraduate, graduate) in your department. Worksheets are due to CASA this year by **June 17, 2020**. Worksheets should be sent electronically to kjsanders@eiu.edu and should also be submitted to your college dean. For information about assessment or help with your assessment plans, visit the Assessment webpage at http://www.eiu.edu/~assess/ or contact Karla Sanders in CASA at 581-6056.

Please use size 10 font or larger.

PART ONE

What are the learning objectives?	How, where, and when are they assessed?	What are the expectations?	What are the results?	Committee/ person responsible? How are results shared?
1.Students will learn fundamental principles at an advanced level in selected areas in chemistry.	**a)** Set of placement exams in four sub-disciplines: Analytical, Inorganic, Organic, and Physical Chemistry; **b)** Department of Chemistry Evaluation of Student Performance on the M.S. Comprehensive Exam; **c)** literature seminar given in *CHM 5001*.	**a)** 100% of incoming students eligible to enroll in chemistry graduate core courses: Bio-Analytical, Inorganic, Organic, and Physical; **b)** 100% of students with scores ≥ 3 (competent, 4-point scale) on knowledge item; **c)** 100% of students with average rating for chemistry content items on evaluation instrument ≥ 2 (3-point scale).	**a)** One student took the entrance exams: Bioanal: 100%, Inorg: 100%, Org: 100%, Phys: 100%; **b)** (5 students in AY 20-21) 100%; **c)** (of 8 students in AY 20-21) 100%, overall average = 2.2	**a)** Graduate Committee; sub-discipline faculty **b)** Student's thesis committee, research advisor and Graduate Coordinator; **c)** course instructors, department faculty. Department Chair and Graduate Committee discuss results, then share with CHM Faculty.
2. Students will be able to conduct original research.	**a)** Department of Chemistry Evaluation of Student Performance on the M.S. Comprehensive Exam; **b)** Department of Chemistry Evaluation of Student Performance on the M.S. Thesis	**a)** 100% of students with scores ≥ 3 (competent, 4-point scale) on independent research item; **b)** 100% of students with scores ≥ 3 (competent) on independent research item.	(5 students in AY 20-21) **a)** 100% **b)** 100%	**a)** Student's research advisor and thesis committee; **b)** student's thesis committee. Department Chair and Graduate Committee discuss results, then share with CHM Faculty.
3. Students will be able to communicate scientific material effectively in speaking and writing.	**a)** *CHM 5001*: seminar evaluation; **b)** Department of Chemistry Evaluation of Student Performance on the M.S. Comprehensive Exam;	**a)** 100% of students with an overall rating ≥ 2 (3-point scale) for presentation items; **b)** 100% of students with scores ≥ 3 (competent, 4-point scale) on communication item;	**a)** (8 students in AY 20-21) 100%, overall average = 2.5; **b)** (5 students in AY 20-21); 100%;	**a)** Course instructors, department faculty; **b)** department faculty; **c)** Student's thesis committee, research advisor and Graduate Coordinator;

3. contd.	**c)** Department of Chemistry Evaluation of Student Performance on the M.S. Thesis; **d)** student research presentations at conferences.	**c)** 100% of students with scores ≥ 3 (competent, 4-point scale) on communication item; **d)** 75% or more of students give a conference presentation by graduation.	**c)** (5 students in AY 20-21) 100% **d)** (8 students in AY 20-21) 50%	**d)** student's thesis advisor, Graduate Coordinator. Department Chair and Graduate Committee discuss results, then share with CHM Faculty.
4. Students will be able to properly utilize chemical information and database sources.	**a)** CHM 5001: seminar evaluation; **b)** Department of Chemistry Evaluation of Student Performance on the M.S. Thesis; **c)** Assignment in *CHM 5002* (use of electronic databases to find relevant chemical information).	**a)** 100% of students with scores ≥ 2 (3-point scale) on literature item; **b)** 100% of students with scores ≥ 3 (4-point scale) on chemical information item; **c)** 100% of students successfully complete assignment.	**a)** (8 students AY 20-21) 100%, overall average = 2.5; **b)** (5 students graduated in AY 20-21) 100%; **c)** (4 students in CHM 5002) 100%.	**a)** Course instructors, department faculty; **b)** Student's research advisor and thesis committee; **c)** course instructors. Department Chair and Graduate Committee discuss results, then share with CHM Faculty.
5. Students will be able to critically analyze a breadth of chemical problems & experimental results.	**a)** Department of Chemistry Evaluation of Student Performance on the M.S. Comprehensive Exam; **b)** Department of Chemistry Evaluation of Student Performance on the M.S. Thesis; **c)** *CHM 5003*: written critique of a published paper; **d)** *CHM 5180*: open ended lab assignment in which students develop two analytical methods for quantifying a chemical substance and compare these methods; **e)** *CHM 5420*: 'chalk-talk' based on a topic in a current organic chemistry journal article; **f)** *CHM 5360*: presentation of research paper on supramolecular chemistry; **g)** *CHM 5210*: completed homework assignments, research paper, or presentation of research paper.	**a)** 100% of students with scores ≥ 3 (competent, 4-point scale) on critically analyze item; **b)** 100 % of students with scores ≥ 3 (competent, 4-point scale) on critically analyze item; **c)** 100% of students successfully complete this activity; **d-f)** 50% of students earn a grade of 90% or higher on selected activity; **g)** 50% of students earn a cumulative grade of 90% or higher on all graded HW assignments.	**a)** (5 students in AY 20-21); 100%; **b)** (5 students in AY 20-21); 100%; **c)** (4 students in AY 20-21) 100%; **d)** (11 students in AY 20-21); 90% **e)** *CHM 5420* was not offered in AY 20-21; next data available in FA 21; **f)** (9 students in AY 20-21) 80%; **g)** (8 students in AY 20-21) 40%	**a)** Student's thesis committee, research advisor, and Graduate Coordinator; **b)** Student's research advisor and thesis committee; **c-g)** course instructors. Department Chair and Graduate Committee discuss results, then share with CHM Faculty.

PART TWO

Describe what your program's assessment accomplishments since your last report was submitted. Discuss ways in which you have responded to the CASA Director's comments on last year's report or simply describe what assessment work was initiated, continued, or completed.

During the AY 20-21, our MS program was populated with a total of 11 students. Out of these, one started the program in SP 2021. Five MS students successfully defended their thesis in SP and SU 2021; three were accepted into very good Ph.D. programs, one is interviewing for a job in industry, and one is in her Optional Practical Training at a company in California. Two students will defend their theses in FA 2021. The rest are continuing their education in our department, and they will graduate in SP 2022.

Based on the quantitative data listed in PART ONE, we have either met or exceeded our learning objectives and goals. Only two exceptions can be identified (entry 3.d. and 5.g). For entry 3.d. (75% or more of students give a conference presentation by graduation), the reason for not reaching our objective is that last year the number of chemistry conferences was significantly reduced, and we faced difficulties in finding funding for travel, both due to the COVID-19 pandemic. However, 4 of our students were present at virtual meetings, a completely new experience for all of us, especially the students. Fortunately, the pandemic did not set-back our students from working on, and some of them completing their degree in a timely fashion, despite a more limited time spent in research labs due to social distancing policies we put in place for safety reasons. As it can be seen in Part One, 100 % of our graduating students successfully defended their theses.

For this academic year, the data in Objective 1a is not extremely useful, since we had only one student joining our program (we had a high number of students continuing on with their education).

We have made improvements in collecting the evaluation forms (Student Performance on the M.S. Comprehensive Exam and Student Performance on the M.S. Thesis) from the thesis research advisors and the thesis committee members, as these are important tools in assessing the quality of our program. In the past we had difficulties in collecting these from all the members of the thesis committee. While not yet a 100 % success, our work in this area continues.

In our last report (AY 19-20) we mentioned that due to a faculty retirement and another taking a leave of absence, we were left with no active physical chemistry faculty in FA 19, therefore CHM 5210 could not be offered. Now that we have a complete contingent of active faculty, the graduate curriculum was delivered according to the regular rotation schedule.

Our accelerated BS/MS program is also stepping forward. Our students enrolled in this program successfully completed the coursework, and they are preparing to defend their theses.

Another important accomplishment of our students was their success in securing graduate research/creative grants (3 students). One of our graduate students (Ms. Katelynn Fuller-Svarz) was named a Hamand Graduate Scholar. These are great achievements that speak about the quality of our students and program.

PART THREE

Summarize changes and improvements in **curriculum, instruction, and learning** that have resulted from the implementation of your assessment program. How have you used the data? What have you learned? In light of what you have learned through your assessment efforts this year and in past years, what are your plans for the future?

We are continuously analyzing our graduate program to find ways of improvement. Improvements cannot be made without good feedback from our students. To achieve this goal, we plan to ask our students to participate in an exit interview. Items in the survey include the distribution of courses over the two years, course sequence, the value of the seminar and elective courses, as well as input about their research experience. The graduate committee is analyzing the content of this survey, and (after discussing it with our graduate faculty) we plan to give it to our next generation of our graduating students, perhaps as soon as FA 2021, when two students will graduate. We are also analyzing if some changes in in the course offering sequence (i.e., switching CHM 5420 – offered in fall semesters odd years with CHM 5360 – offered in spring semesters odd years) would be beneficial to our program.

Student Learning Assessment Program
Response to Summary Form
Graduate Program 2021
May 11, 2022

Department: Chemistry

Degree and Program Name: Master of Science in Chemistry
Reviewer: Dr. Nikki Hillier, Graduate Assessment Coordinator, Graduate School

Category	Comments
Learning Objectives	The objectives for the program encompass all the graduate learning goals established by EIU's Council on Graduate Studies. Your next report will need to include the 5th learning goal regarding ethics and professionalism.
How, Where, and When Assessed	The assessment plan is clear. Students are assessed when they begin the program and then toward the end of the program through comprehensive exams and a thesis evaluation. Throughout the program students are assessed using a literature seminar and a variety of assignments including: lab assignments, article critiques, and oral presentation of research papers. Students are also assessed outside of the program through conference presentations and article submissions.
Expectations	Expectations are appropriate for graduate learning and are clearly defined.
Results	The program is meeting or exceeding almost all assessment goals. The exceptions were the limited conference presentation attendance- this may be due to pandemic, but many organizations were holding virtual conferences as your report mentions.
How Results Will be Used	The assessment committee collects assessment data, and discusses with Chair, then department as whole. This is appropriate.
Recommendations	Your program has a robust assessment plan. It appears faculty communicate regarding assessment frequently, and that several faculty are involved in those discussions That all your graduating students successfully defended theses speaks to the rigor of your program, quality of your students, and the commitment of your faculty to student learning. We congratulate you on implementing your accelerated M.S. program. This is an excellent tool for keeping talented students in a strong program. That your students are earning travel grants and that one student was a Hamand Scholar demonstrates your commitment to mentor and support students in their success. You mentioned exit interviews and discussed formalizing them. Perfecting the instrument is not as important as having the conversations, so we encourage you to start having those as students complete the program and to include in your next report. The Council on Graduate Studies added Ethical and Professional Responsibility to the learning goals. Please be sure to include this learning goal in your next report. That so many faculty are included in the assessment results is impressive, but making improvements to the program based on assessment is the most meaningful way to use the

	results. For your next report, include what changes you make or intend to make based on assessment. We recommend continuing to use the strong assessment measures currently in use, and encourage you to start conducting exit interviews.