

## STUDENT LEARNING ASSESSMENT PROGRAM SUMMARY FORM

(FA 2024 – SP 2025)

Program Name: **M.S. in Chemistry**  
 Dept: **Chemistry and Biochemistry**  
 College: **CLAS**  
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### Part 1:

<b>CGS Learning Goal # 1:</b> A depth of content knowledge.	<b>Program Learning Goal(s):</b> Students will learn fundamental principles at an advanced level in selected areas in chemistry.
How are learners assessed?	a) Students' overall GPA during the evaluation period. b) Department of Chemistry Evaluation of Student Performance on the M.S. Comprehensive Exam. c) literature seminar given in CHM 5001.
What are the expectations for the students?	a) 100% of students maintain a GPA $\geq 3.5$ during the evaluation period. b) 100% of students with scores $\geq 3$ (4-point scale) on knowledge item. c) 100% of students with average rating for chemistry content items on evaluation instrument $\geq 2$ (3-point scale).
What are the expectations for the program?	a) 100% of students maintain a GPA $\geq 3.5$ during the evaluation period. b) 100% of students with scores $\geq 3$ (4-point scale) on knowledge item. c) 100% of students with average rating for chemistry content items on evaluation instrument $\geq 2$ (3-point scale).
What were the results?	a) 7 out of 8 students with a GPA $\geq 3.5$ [88 %]. b) 4 out of 4 students with a score $\geq 3$ (4-point scale) [100 %] c) 3 out of 3 students with a rating $\geq 2$ (3-point scale).
How are the results shared? How will these results be used?	a) graduate committee. 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 and decide upon further improvements of the program.

<b>CGS Learning Goal # 2:</b> Critical thinking and problem-solving skills.	<b>Program Learning Goal(s):</b> Students will be able to critically analyze a breadth of chemical problems & experimental results.
How are learners assessed?	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: completed homework assignments, or presentation of a research paper on supramolecular chemistry. g) CHM 5210: completed homework assignments, research paper, or presentation of a research paper.
What are the expectations for the students?	a) 100 % of students with scores $\geq 3$ (competent, 4-point scale) on "critically analyze" item. b) 100 % of students with scores $\geq 3$ (competent, 4-point scale) on "critically analyze" item. c) 100 % of students successfully complete this activity. d-g) 50 % of students earn a grade of 90% or higher on corresponding activity.
What are the expectations for the program?	a) 100 % of students with scores $\geq 3$ (4-point scale) on "critically analyze" item. b) 100 % of students with scores $\geq 3$ (4-point scale) on "critically analyze" item. c) 100 % of students successfully complete this activity. d-g) 50 % of students earn a grade of 90% or higher on corresponding activity.
What were the results?	a) 100% of students with scores $\geq 3$ (4-point scale) on "critically analyze" item. b) 100% of students with scores $\geq 3$ (4-point scale) on "critically analyze" item. c) 100% of students completed this activity. d) CHM 5180: 4 students in total; 4 students with a grade $\geq 90$ %; 100 %. e) CHM 5420: no data, the course was not offered during the evaluation period. f) CHM 5360: 5 students in total; 5 students with a grade $\geq 90$ %; 100 %. g) CHM 5210: 5 students in total; 5 students with a grade $\geq 90$ %; 100 %.
How are the results shared? How will these results be used?	a) Student's thesis committee, research advisor, and Graduate Coordinator. b) Student's research advisor and thesis committee Graduate Coordinator. c-g) course instructors. Department Chair and Graduate Committee discuss results, then share with CHM Faculty and decide upon further improvements of the program.

<b>CGS Learning Goal # 3:</b> Effective oral and written communication skills.	<b>Program Learning Goal(s):</b> Students will be able to communicate scientific material effectively in speaking and writing.
How are learners assessed?	a) CHM 5001: overall seminar evaluation. b) Department of Chemistry Evaluation of Student Performance on the M.S. Comprehensive Exam. c) Department of Chemistry Evaluation of Student Performance on the M.S. Thesis. d) Student research presentations at conferences.
What are the expectations for the students?	a) 100% of students with an overall rating $\geq 2$ (3-point scale) for presentation items. b) 100% of students with scores $\geq 3$ (4-point scale) on the communication item. c) 100% of students with scores $\geq 3$ (4-point scale) on communication item. d) 75% or more of students give a conference presentation by graduation.
What are the expectations for the program?	a) 100% of students with an overall rating $\geq 2$ (3-point scale) for presentation items. b) 100% of students with scores $\geq 3$ (4-point scale) on the communication item. c) 100% of students with scores $\geq 3$ (4-point scale) on the communication item. d) 75% or more of students give a conference presentation by graduation.
What were the results?	a) 4 students with an overall rating $\geq 2$ (3-point scale) for presentation items, 100 %. b) 4 students with scores $\geq 3$ (4-point scale), 100 %. c) 4 students with scores $\geq 3$ (4-point scale), 100 %. d) 5 out of 7 students presented a conference or a poster in AY 2024-2025, 71 %
How are the results shared? How will these results be used?	a) Course instructors, department faculty. b) department faculty. c) Student's thesis committee, research advisor and Graduate Coordinator. d) student's thesis advisor, Graduate Coordinator. Department Chair and Graduate Committee discuss results, then share with CHM Faculty and decide upon further improvements of the program.

<b>CGS Learning Goal # 4:</b> Evidence of advanced scholarship through research and/or creative activity.	<b>Program Learning Goal(s):</b> Students will be able to conduct original research and properly utilize chemical information and database sources.
How are learners assessed?	a) Department of Chemistry Evaluation Student Performance on the M.S. Comprehensive Exam. b) Department of Chemistry Evaluation of Student Performance on the M.S. Thesis. c) CHM 5001 overall seminar evaluation. d) Department of Chemistry Evaluation of Student Performance on the M.S. Thesis. e) Assignment in CHM 5002 (use of databases to find relevant chemical information).
What are the expectations for the students?	a) 100% of students with scores $\geq 3$ (4-point scale) on the independent research item. b) 100% of students with scores $\geq 3$ (4-point scale) on the independent research item. c) 100% of students with scores $\geq 2$ (3-point scale) on the literature item. d) 100% of students with scores $\geq 3$ (4-point scale) on chemical information item. e) 100% of students successfully complete assignment.
What are the expectations for the program?	a) 100% of students with scores $\geq 3$ (4-point scale) on the independent research item. b) 100% of students with scores $\geq 3$ (4-point scale) on the independent research item. c) 100% of students with scores $\geq 2$ (3-point scale) on the literature item. d) 100% of students with scores $\geq 3$ (4-point scale) on chemical information item. e) 100% of students successfully complete assignment.
What were the results?	a) 4 students with scores $\geq 3$ (4-point scale), 100 %. b) 4 students with scores $\geq 3$ (4-point scale), 100 %. c) 4 students with scores $\geq 3$ (4-point scale), 100 %. d) 4 students with scores $\geq 3$ (4-point scale), 100 %. e) No data, the course was not offered during this evaluation period.
How are the results shared? How will these results be used?	a) Student's research advisor and thesis committee. b) Student's thesis committee. c) Course instructors, department faculty. d) Student's research advisor and thesis committee. e) Course instructors. Department Chair and Graduate Committee discuss results, then share with CHM Faculty and decide upon further improvements of the program.

<b>CGS Learning Goal # 5:</b> Ethics and Professional Responsibility.	<b>Program Learning Goal(s):</b> The graduate students demonstrate an understanding for and follow the professional ethics guidelines established for the chemistry field.
How are learners assessed?	a) Complete CITI training and earn the Responsible Conduct of Research certificate. b) Ethical issues discussions and case analyses in CHM 5002 and/or CHM 5003.
What are the expectations for the students?	a) Students are expected to earn the CITI Responsible Conduct of Research certificate. b) Students are expected to analyze and criticize several cases of unethical behavior in chemical science.
What are the expectations for the program?	a) 100% of students earn the CITI Responsible Conduct of Research certificate. b) 100% of students participate in class discussions.
What were the results?	a) All students earned the certificate; 100%. b) All students participated in CHM 5002 or CHM 5003 discussions and assignments; 100%.
How are the results shared? How will these results be used?	Department Chair, Graduate Committee and instructors discuss results, then share and discuss with CHM Faculty and decide upon further improvements of the program.

**Part 2: Describe what your program's assessment accomplishments are since your last report was submitted. Discuss ways in which you have responded to the Graduate Assessment Summary Response from last year's report or simply describe what assessment work was initiated, continued, or completed.**

During the academic year FA 2024 – SP 2025 we had 8 students enrolled in our MS program. Four of them successfully graduated (Chinedu Okoro, Foster Amoah, Boluwatife Ajewole, and Emmanuel Adusah) and the rest (Sam Eccles, Deep Patel, Lauren Hendershot, and Anjali Gunadeera) are continuing their education in our department, with a planned graduation in SP 2026. We also had a non – thesis student (Austin Long) enrolled in the program, but he was not included in this assessment.

Based on the quantitative data listed in PART ONE, generally we have either met or exceeded our learning objectives and goals. Last year we found that some students didn't perform as expected in some of our graduate level classes. We discussed this issue within our Graduate Committee, and then at large in a faculty meeting, and now we are happy to state that the performance of our students improved as can be seen in this year's report.

One weakness identified in the last assessment report was the limited conference presentation attendance. This FA 2024 – SP 2025 AY this activity improved, although not as we would have liked it. Financial issues might be an explanation.

However, when attended, there were important national conferences, such as the ACS national meeting of fall 2024 in Denver. Also, they all presented a poster in our yearly departmental Research Celebration, held on Monday, November 13<sup>th</sup>, 2024. Further, all our master students gave

an oral presentation at the Summer 2025 Departmental Symposium (July 11, 2025). (While this last event falls outside the strict FA 2024 – SP 2025 assessment period, this information shows some improvement in our student conference and symposia participation).

**Part 3: 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 constantly analyzing our graduate program to find ways of its improvement. Good feedback from our students and all faculty is important to achieving this task. Therefore, we have asked our students to complete an exit interview. The exit interview is *voluntarily*, and items in the survey include (among others) the distribution of courses over the two years, course sequence, how the research work contributed to their professional growth, and the value of the seminar and elective courses. Most of our *students completed the interview* and the results showed that our program suits their needs they were looking for to further their future careers.

We are looking into the possibility to start an “online submission” of several forms, like the students exit interviews, or the evaluation of student performance on the M.S. Comprehensive Exam and student performance on the M.S. Thesis, in an attempt to increase the collection of these documents to a 100 % rate. This will lead to a better assessment of our program and will indicate what actions are needed for improvement.

In general, we plan to change the course offering sequence, the course offering terms, as well as the format of some graduate classes, in an effort to improve our graduate students’ learning experience. For example, we will expand CHM 5180 (from a combined lecture + lab course) into two separate activities (lecture and lab, CHM 5280 and CHM 5285, respectively). Such changes would help some incoming students to better adjust to our graduate program, especially if there is a need for them to take some undergraduate classes before enrolling in our graduate lectures. However, these changes are not easy to make, as there are other (teaching and administrative) considerations to consider.

We will also continue to strengthen our program by closely following the Academic Professional Guidelines put forth by the American Chemical Society (see the full document at [https://www.acs.org/careers/career-services/ethics/academic-professional-guidelines.html#articleContent\\_columnsbootstrap](https://www.acs.org/careers/career-services/ethics/academic-professional-guidelines.html#articleContent_columnsbootstrap)). Our faculty strives to maintain high standards of honesty, integrity, ethics, and diligence in the conduct of teaching and research, as well as to increase the academic and research progress of our student population.