

University of Arkansas Department of Chemistry and Biochemistry Undergraduate Program
Assessment (CHEM M.S., CHEM Ph.D.)

Report: Academic Year 2024

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Program Goals and Learning Outcomes

The overall goals of the degree programs of the Department of Chemistry and Biochemistry can be described in the following broad terms.

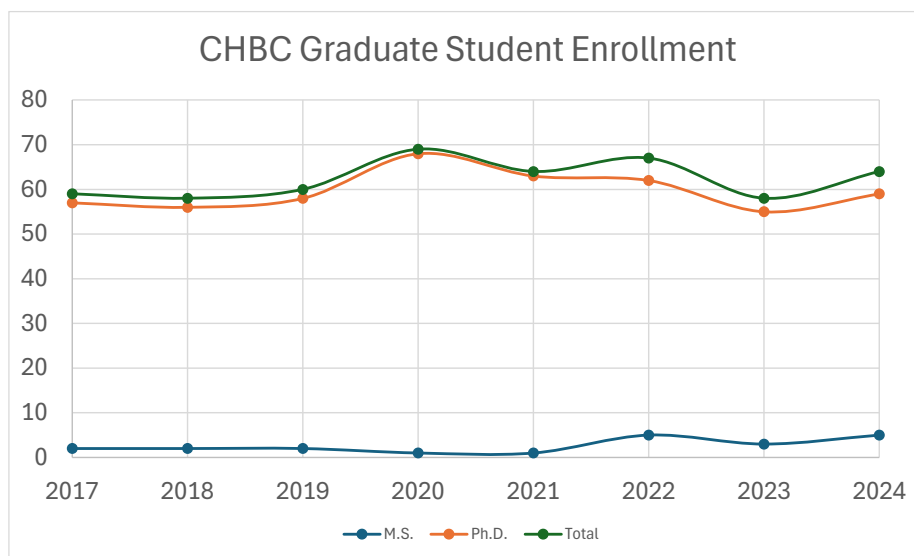
1. Foster the scientific curiosity of students about chemistry and biochemistry.
2. Communicate the current state of knowledge and technology to students.
3. Nurture critical thinking, reasoning, and problem-solving abilities.
4. Enhance students' written and oral communication skills for communicating scientific ideas.
5. Prepare students to achieve academic and professional success.

In particular, The Learning Outcomes for Students completing a M.S. or Ph.D. degree in chemistry and biochemistry are:

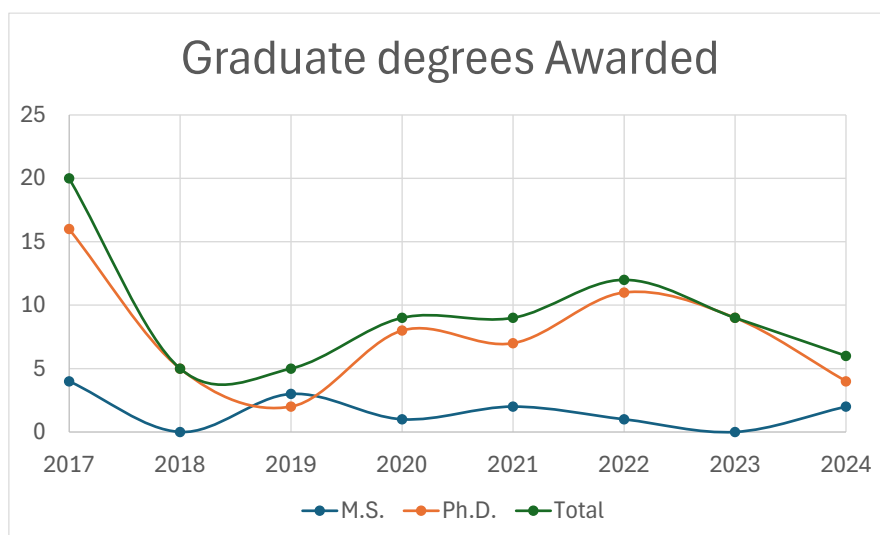
1. Mastery of the chosen discipline of chemistry/biochemistry at the graduate level
2. Capacity for original research as evidenced by the preparation and defense of a M.S. thesis or a Ph.D. dissertation.
3. Ability to communicate effectively both as a participant and presenter in graduate seminars.
4. Demonstrate excellence in the classroom for teaching assistants.
5. Professional development in science via the presentation of research at national conferences, applying for and receiving nationally competitive grants, publishing research articles and books in the chosen discipline, participation in departmental professional development seminars.
6. Participation in the academic life of the Department (attending seminars and public lectures)

2024 Data and Assessment

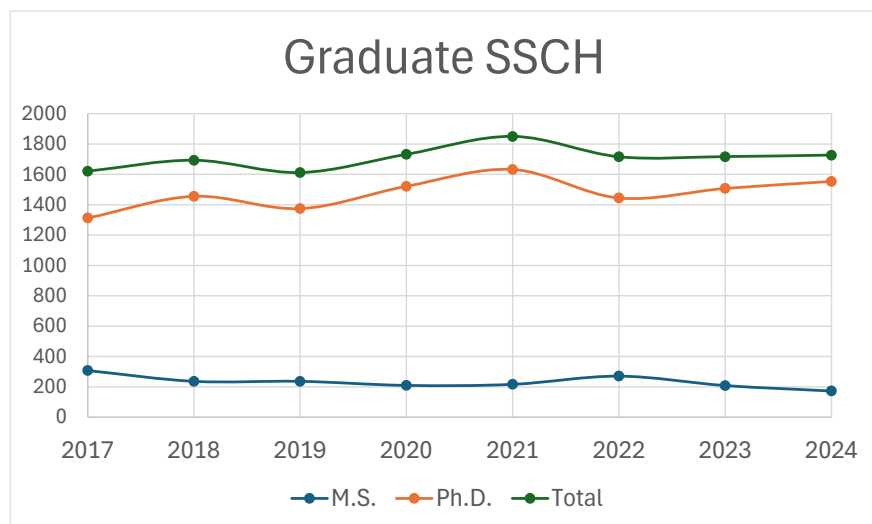
Based on data from the Office of Institutional Research and Assessment, the total enrollment in graduate chemistry programs (M.S. and Ph.D.) in 2024 was 59. The vast majority are Ph.D. students with only 5 students enrolled in the M.S. program.



In 2024, the total number of M.S. degrees awarded was 2, and the total number of Ph.D. degrees awarded was 4. Due to variations in how long graduate students take to graduate, there are large year-to-year fluctuations in these numbers. However, in general, we usually graduate far more Ph.D.'s in chemistry than M.S. degrees, which is the norm for chemistry. Between 2017 and 2024, we graduated, on average, 1.6 M.S. students per year and 7.8 Ph.D. students per year. Employers of chemists tend to employ at the B.S. and Ph.D. level far more than the M.S. level.



The total number of graduate level SSCHs for chemistry and biochemistry in 2024 was 1727, with the majority being at the Ph.D. level. The number of graduate SSCH in chemistry is relatively constant, in line with the consistency of graduate student enrollment.



Assessment of graduate students while they are in graduate school occurs via annual meetings of students with their Ph.D. committee (consisting of 4-6 faculty members). These annual committee meetings consist of a written report of their progress for the prior year and an oral presentation to discuss their results and to determine what their research plans are for the upcoming year. As the student nears graduation, the timeline to graduation is often a large discussion topic of these meetings.

Success of graduate students is often measured on the number of publications/reviews that they coauthor while in graduate school, and the number of meeting abstracts/conference proceedings that they submit (accompanied by an oral or poster presentation at a professional meeting). We have not yet compiled the data for 2024, but the data for 2018-2023 are shown in the following table. We will work with the CHBC library to update these numbers for 2024, and perform further analysis of graduate student publications

Publications by Graduate Students from CHBC Department, and those students advised by CHBC faculty, 2018-2023 (n=373)	
Journal Articles	143
Meeting Abstracts	108
Dissertation/Theses	69
Book Chapters	24
Preprints	8
Patents	5
Reviews	15
Conference Proceeding	1

Another key indicator of graduate student success is where graduates are placed. This data is often more difficult to track at the institutional or even department level. Most of the time, individual PIs stay in contact with their students after graduation (although this is not always the case). We plan to develop a strategy for PIs to report to the department on their students' placement so that graduate student success can be tracked more robustly. Many of our alumni (at the undergraduate and graduate level) sign up to our mailing list to receive the department newsletter (The Mole), to keep them informed of department activities. We will also use this resource to better track the placements of our graduate students.