The Undergraduate Program Learning Outcomes (PLOs) are as follows:
Students graduating with a BS /BA degree in Chemistry or Biochemistry will be able to:

1. demonstrate knowledge in the various areas of chemistry, including inorganic chemistry, analytical chemistry, organic chemistry, physical chemistry, and biochemistry.
2. work effectively and safely in a laboratory environment to perform experimental procedures and operate modern chemical/biochemical instruments.
3. use quantitative reasoning to analyze chemical problems and evaluate chemical data.
4. write and speak clearly on chemical or biochemical issues.
5. work collaboratively in teams to solve chemical problems.

We have gathered data to assess PLO 1, demonstrate knowledge in the various areas of chemistry, including inorganic chemistry, analytical chemistry, organic chemistry, physical chemistry, and biochemistry, and PLO 2 work effectively and safely in a laboratory environment to perform experimental procedures and operate modern chemical/biochemical instruments.

Data were collected in two of our courses which are required in all our undergraduate programs: Chem 332 (Organic Chemistry), Chem 351 (Physical Chemistry). Since Chem 351 has no laboratory component, PLO 2 data is taken from Chem 331, which does have such a component. In Chem 332, PLO 1 data is gathered using a national standardized exam (written by the American Chemical Society), which allows us to measure how our students perform relative to national norms. In chem 351, embedded questions in the final exam, that are common to questions asked in previous semesters are used to compare the current class to what has been observed in the past and inform any changes that are to be made.

Students who successfully complete the year

2016	33	28
2017	29	27
2018	36	33
2019	30	30

Results of Capstone Organic Laboratory Assignment

Questions (1-4, 7-

Table 6 – Other Majors (Extension (2 Students), Human Development (1) MS Chemistry (2))

Data were collected to assess PLO1 in Chem 631, Graduate Organic Chemistry, which is required for our MS students. The assessment tool used was embedded questions in the final exam that map to the SLOs for the course. ILO data were collected in Chem 691 and 693, which all graduating MS students must complete as a capstone experience.

Analysis: Approximately 50% of the students were able to meet the expectation for SLO #2 and SLO#4. Fewer students were able to meet all of the parts of SLO#6. The SLO that students had the most difficulty meeting was SLO#5.

Plans: In the future, more time will be devoted to practicing strategies that will develop the skills to solve problems based on the principles of SLO #5. To improve the performance on SLO#6, in-class problem sets will be used to more thoroughly go over this material.

During the 2018-2019 academic year, six students completed their capstone experience: four students through CHEM 691 and two students through CHEM 693. An overall score of 70% (22/32) is considered to be meeting expectations. An overall score of 85% (27/32) is considered to be exceeding expectations. All of the students met expectations and half of them exceeded expectations. In general the students taking CHEM 691 scored higher than those taking CHEM 693. It is likely that this is due to the fact that the University thesis is based on research that students would have been conducting for multiple semesters and therefore had more time to shape their work into a complete thesis while students taking CHEM 693 work on their paper for one semester only. However, it is very satisfying to have all of our MS graduate students able to