



CONTENT KNOWLEDGE (Declarative knowledge): Graduates in Chemistry will understand basic concepts, theories, and experimental findings in four core areas of chemistry (analytical, biochemical, inorganic and physical).

CRITICAL THINKING (Analytical Skills): Graduates in Chemistry will use critical thinking to evaluate information and data related to chemical processes by applying basic principles of scientific methodology including (1) the nature of scientific explanations, (2) threats to the validity and reliability of observations, (3) the limitations of measurement scales, (4) the use of experimental designs to test hypotheses and (5) the proper interpretation of experimental data.

Students will complete the following courses, which adhere to guidelines of the American Chemical Society's Committee on Professional Training:

CHM 3120 & CHM 3120L: Quantitative Analysis Lecture and Lab
BCH 3033 & BCH 3103L: Biochemistry 1 and Biochemistry Lab
CHM 3609 & CHM 3609L: Inorganic Chemistry Lecture and Lab
CHM 3410 & CHM 3410L: Physical Chemistry 1 Lecture and Lab, or
CHM 3400: Introduction to Physical Chemistry

For each of the courses described above, guidelines for examination questions, research paper assignments and other assessments will be developed by the faculty to assess students' understanding of content knowledge, methodology and critical thinking in each of the four areas of chemistry. These will be developed in accord with the guidelines of the American Chemical Society's Committee on Professional Training and will be consistent with the content of the assessment criteria established by the Examinations Institute of the American Chemical Society.

On a rotational basis of not less than two per year, nationally standardized and normalized examinations from the Examinations Institute of the American Chemical Society will be administered to students at their completion of each of the above-named courses to assess their content knowledge and critical thinking.

Mean scores of students in this program for each of the standardized and normalized examinations should exceed the 50th percentile on a national basis.

CONTENT KNOWLEDGE (Technical Skills): Graduates in Chemistry will be able to perform laboratory techniques sufficient to conduct basic and advanced experiments in Chemistry and Biochemistry

Students will take the following required laboratory courses:

Quantitative Analysis Lab (CHM 3120L)

Inorganic Chemistry Lab (CHM 3609L)

Organic Chemistry Lab (CHM 2211L)

In these courses, nationally standardized and normalized laboratory practicals based on those recommended by the Examinations Institute of the American Chemical Society will be included to assess students' skills in the following areas:

- * Small-Scale Techniques
- * Density and Volume
- * Acids, Bases, and Titrations
- * Generation and Identification of Gases
- * Solutions and Chromatography
- * Reaction Rates
- * Qualitative Analysis

On a rotational basis of not less than three per year, students will be assessed on their abilities to successfully complete the tasks of the laboratory practicals described above, in accord with the grading rubrics established by the Examinations Institute of the American Chemical Society.

All students must be able to successfully complete a majority of the tasks in each of the laboratory practicals described above.

COMMUNICATION (Written Communication): Graduates in Chemistry will be able to produce writing that is grammatically correct, well-organized, and properly formatted and in accord with the American Chemical Society's Style Guide.

COMMUNICATION (Graphic Communication): Graduates in Chemistry will be able to produce and interpret charts, graphs and tables that effectively and accurately display chemical data, relationships and principles.

Since most of the writing assignments in this program are in the form of laboratory reports, we will focus on such reports in the following courses:

Organic Chemistry Lab (CHM 2211L)
Inorganic Chemistry Lab (CHM 3609L)
Biochemistry Lab (BCH 4103L)

Guidelines and a grading rubric have been developed which will be employed to assess all reports written by students in these courses. Included in the rubric are assessment criteria for the following sections of such reports, in accord with the guidelines of the Style Guide of the American Chemical Society:

Introduction
Experimental
Results and Discussion, including graphical and tabular presentation of data
Conclusion
References

The rubric will be thoroughly explained to the students in each class.

All reports, which are completed in the above-named courses, will be assessed by this rubric. Results will be normalized through grading of reports by multiple instructors and subsequent comparisons.

On a yearly basis, student scores from each section of the grading rubric of the reports of the final two laboratory assignments in each course will be tabulated. In addition, total scores for each of these reports will be tabulated.

Scores in each section of the reports of each student shall exceed 50% of each total possible score. In addition, the total scores for the reports of 75% of the students shall exceed 75% of the total possible score.