

Institutional Effectiveness Report
Academic Year 2014-2015
Undergraduate Chemistry

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Mission Statement

The mission of the chemistry department is to provide a dynamic and inquiry based curriculum in chemistry that provides knowledge and skills needed for students to be successful in their professional and life-long endeavors. Accordingly, the department offers introductory, foundation, and in-depth chemistry courses that satisfy the liberal arts requirements, pre-professional, basic chemistry degree, or the American Chemical Society approved degree. The department encourages undergraduate research and forming ties within the scientific community.

CHEMISTRY PROGRAM

Program Goals/Objectives, which must include SLO's, student learning outcomes (Knowledge, Skills, and Attitudes)

- Students will be conversant in the major areas of Chemistry including laboratory techniques commonly used in the field and able to clearly communicate their results verbally and in writing.
- Students will feel confident in their ability to critically evaluate and research chemical information.
- Students will know and be able to follow the proper procedures and regulations for safe handling and use of chemicals.

Measures of Learning Outcomes

All Graduating Seniors are required to take the CHEM 499, Chemistry Senior Capstone, during which they:

- Take the ACS exit exam (Diagnostic of Undergraduate Chemical Knowledge)
- Carry out an exit interview with the Chair and complete a Departmental questionnaire
- Search the current chemical literature on a topic of their choice and choose a paper in this area. They then prepare and present two critical analyses of this paper to the Department, a practice and a final presentation.

All students enrolled in CHEM 201 must undergo safety training and take a cumulative exam on laboratory safety.

Benchmarks

-Students will score at least 50th percentile on the ACS Diagnostic of Undergraduate Chemical Knowledge exam.

-The Presentations in the Senior Capstone will be judged by a majority of the faculty to be acceptable. The students will earn a passing grade in the Senior Capstone.

-The students must earn a passing grade of 70 or higher on the safety exam in CHEM 201.

Assessment Data

In 2015 two students were enrolled in CHEM 499, Senior Chemistry Capstone.

-Both took the ACS Diagnostic of Undergraduate Chemical Knowledge exam and averaged 47th percentile.

-Both students presented current papers to the Department, and both final presentations were judged satisfactory by a majority of the faculty.

-Both students received passing grades in the Senior Capstone.

-Both students completed the exit interview and questionnaire.

In the fall of 2014 and the spring of 2015 all students enrolled in CHEM 201 passed the laboratory safety exam with a grade of 70 or higher.

Analysis of Results to Make Program Improvements

-The average ACS Diagnostic of Undergraduate Chemical Knowledge exam score of 47th percentile was slightly, but not significantly below the desired 50th.

-The students interviewed in 2015 expressed satisfaction with their education and confidence in their ability to begin their careers. Each expressed regret that they never got to utilize the Department's Gas Chromatograph-Mass Spectrometer, which was inoperable for most of the year.

-The exit interviews and questionnaires completed by our students last year identified several issues for concern. These are summarized below along with corresponding actions taken by the Department.

*Primary Issues Identified During 2013-2014
with a Review of Actions Taken During 2014-2015 for the Department of Chemistry*

Issues of Concern 2014-2015	Actions Taken
<p>The Tutoring Program needs to continue to be developed for assisting students in the lower level chemistry lectures and laboratories.</p>	<p>Tutoring sessions from this year were very productive. There were seven tutors who worked in the tutoring center. Over 520 individual tutoring sessions were conducted, and reflection statements that were required for tutors and some tutee classes were encouraging. Most have indicated that the tutoring sessions have increased their understanding of chemistry.</p>
<p>Increase membership and participation in the Student Chapter of the American Chemical Society</p>	<p>For 2014-2015, there were a total of 13 chapter members.</p> <p>Recruitment begins with chapter members assisting in freshman move-in day. Members wear their organization t-shirts and name tags and make contacts with new students.</p> <p>Recruitment and retention were also achieved by having professors announce the first meeting of the semester in chemistry lectures. Flyers were also posted in various locations around campus. A social in the Fall was held for recruitment as well as many other activities throughout the year. The Student Chapter also was represented at the Student Organization Fair. The Student Chapter also has a Facebook page (Francis Marion University's American Chemical Society) to improve our web presence and awareness about the group's activities. In addition, email addresses were collected this year and used to promote chapter activities.</p> <p>The student chapter was involved in a variety of activities. These included monthly meetings, social events, field trips, and professional meetings.</p> <p>The Student Chapter was recognized with a Commendable Chapter Award for 2013-2014.</p>
<p>Increase the Chemistry department's ties with the scientific community</p>	<p>Three chemistry faculty and ten students attended the Southeast Regional Meeting of the American Chemical Society in Nashville, TN from October 16-19th, 2014. One faculty member presented a poster highlighting the history of the SC section in celebration of its 100th year. The student president of FMU's ACS Chapter presented a poster highlighting chapter events from the previous year.</p>

	<p>One faculty member completed the award period of a cooperative grant (SC-EPSCoR) with USC faculty, which funded summer research for two students.</p>
<p>Increase the opportunity for chemistry students to participate in undergraduate research</p>	<p>Eleven students were involved in undergraduate research projects this year.</p> <p>The CHEM 102-Honors Lab (13 students) did a two-week group research project on the synthesis and characterization of metal organic framework containing terbium.</p> <p>Three faculty members with four undergraduate researchers presented an exhibit at the Annual FMU Research and Exhibition Day.</p> <p>One faculty member gave an oral presentation and five undergraduate students presented posters on their undergraduate research at the Southeast Regional Meeting of the American Chemical Society (SERMACS) in Nashville, TN from October 16-19th, 2014.</p> <p>One faculty member and two undergraduate researchers presented posters at the National ACS meeting in Denver, CO on March 26, 2015.</p> <p>Three undergraduate students presented posters at the SC ACS Awards meeting at Claflin University on April 22, 2015.</p>
<p>Update of laboratory equipment and instrumentation</p>	<p>A rotary evaporator was added to the department this year.</p> <p>Sources of funding are being examined for the replacement of the GC-MS.</p>

Pharmaceutical Studies Program

Program Goals/Objectives, which must include SLO's, student learning outcomes (Knowledge, Skills, and Attitudes)

-Students will be prepared to apply for admission to the South Carolina College of Pharmacy (SCCP), completing a minimum of 90 hours at Francis Marion University (FMU) that includes the pre-pharmacy curriculum and general education requirements.

-Students will gain familiarity with the application process for SCCP, which includes the Pharmacy College Application Service (PharmCAS) and the Pharmacy College Admission Test (PCAT).

-Students will be conversant in the areas of anatomy, physiology, organic chemistry, and biochemistry, which are prerequisite topics for pharmacy school coursework.

-Students will gain confidence in their interview skills as a part of their preparation for applying to pharmacy school.

Measures of Learning Outcomes

-Students will take the Pharmacy College Admission Test (PCAT), which contains questions from the major areas of coursework in biology and chemistry.

-Students will complete a departmental questionnaire.

Benchmarks

-Students composite PCAT score will be acceptable to the SCCP.

-Students should attain an overall grade point average of 3.25 to be competitive in their pharmacy school application.

Assessment Data

-Our first student to obtain the BSPS degree from Francis Marion University had a 3.82 grade point average.

-PCAT scores are released to the SCCP and must be acceptable to SCCP for admission into their program.

Analysis of Results to Make Program Improvements

-Students whose composite PCAT scores are below the 70th percentile will be advised to complete additional preparation for the PCAT and retake the test.

-Students whose grade point average is below 3.00 will be advised to retake courses in which a grade of C or lower was earned.

-Students who are not accepted to SCCP after completing FMU requirements for the BSPS will be advised to continue studies at FMU to earn a bachelor's degree at FMU, which will strengthen their application to pharmacy school.