Unit Effectiveness Plan for 2003-2004
Department(Unit): Chemistry and Biochemistry
College (Division): Dean - College of Science

Unit Mission or Purpose:
Provide a strong teaching, research, and service program that is recognized nationally and internationally by the science community; educate and train students to be productive in their professions; have an appreciation for science and its value to society; and be independent research leaders and contributors to the GNP for the 21st century.

Articulation of how unit mission/purpose relates to University mission:
The department of chemistry and biochemistry supports the University mission by offering undergraduate and graduate degree programs as well as developing new knowledge through research that enhances the University's reputation and recognition as a comprehensive research and teaching institution of higher education in Texas and beyond.

Intended outcome	Related Institutional Goal/Objective/Strategy	Action Steps	Method of Assessment (Who, What, When)	Results of Assessment	Proposed Changes and Recommendations for Improvement	Resources Needed for Proposed Changes
Research active faculty will support research activities through externally funded grants and contracts.	Strategy 3A. To promote and sustain the excellence of academic programs. Strategy 3B. To promote the recruitment, development, and retention of a distinguished faculty.	Require research active faculty to apply for research grants, publish papers, and present original research results at regional and national chemical conferences.	Each year faculty will be evaluated by department chair as well as all faculty in the department. Assessment will be made of externally funded research levels, number of publications, and number of conference presentations with comparison to previous years.	Grant monies increased from $1,080,000 in 2002 to 1,480,000 in 2003, a 42% increase. Publications in refereed journals increased from 55 in 2002 to 62 in 3002, a 13% increase. The number of research presentations increased from 53 in 2002 to 57 in	none.	none.

				2003, an 8% increase.		
Departmental Faculty will be involved in Departmental, College and University committees aimed at achieving the mission of the University. Faculty will be involved in community activities related to conveying the importance of scientific research.	Strategy 3E. To enhance the effectiveness and efficiency of University operations.	Assign or elect faculty to serve on committees. Encourage faculty to be involved in the community.	The department chair will review all committee assignments for faculty in the department each year. Feedback from committees and reports of accomplishments will be used to assess faculty members participation and effectiveness. Reports of activities in the community will be gathered on an annual basis.	A total of 14 and 19 department members served on college and university committees, respectively. Fifteen civic talks were also presented. Each faculty member submitted a detailed annual report of his committee and community service, reviewed by the chairman.	none.	none.
Students will make satisfactory progress towerds desired degree by receiving appropriate guidance and degree plan information.	Strategy 2B. To promote and support a student-centered academic community that enables students to achieve their educational goals.	Determine average times for students receiving degrees to complete their studies.	Advisors and program administrators will document times to graduation for specific degree programs and assess this data relative to previous years to identify areas that have improved and those still needing improvement.	The mean time to graduation for students who originally enrolled as freshman in one of our undergraduate degree programs for the last four academic years (starting with 2000-01 is: 6.42, 4.33, 5.70 and 5.17 years. The anomalously low value of 4.33	none.	none.

				years was in a year in which there were only two graduates, and is not statistically significant (all other years had eight or more graduates). While our sample sizes are small, it would appear that our advisors are being effective in helping our students achieve their academic goals.		
BA/BS - Chemistry						
Student Competencies: this is for BA chemistry						
Upon graduation Chemistry majors will demonstrate proficiency in computer skills as demonstrated by successful execution of specific computer based assignments. The students also demonstrate proficiency in courses such as Instrumental analysis (CHEM 4461) and quantitative analysis (CHEM 2285 and CHEM 2335).	Strategy 2B. To promote and support a student-centered academic community that enables students to achieve their educational goals.	Require Chemistry majors to take GEOL 1491, or CSE 1301, or the University Computer Proficiency Exam.	Undergraduate Advisor will track and assess graduates in chemistry and biochemistry for competency in computer skills (evidenced by ability to execute email, web searches, word processing, and spread sheet manipulation) by evaluating and ensuring completion of GEOL 1491 or CSE 1301, or by receiving a passing grade in the University Computer Proficiency exam.	100% of all students satisfied the university computing literacy requirement. 88% of all students passed CHEM 2335 and 100% of all students passed CHEM 2285.	none.	none.

Upon graduation Undergraduate Chemistry majors will domonstrate proficiency in communication skills as demonstrated by oral presentations and examinations.	Strategy 2B. To promote and support a student-centered academic community that enables students to achieve their educational goals.	Require Chemistry majors to take CHEM 4313 or CHEM 4101, which are designed to improve oral communication skills.	Faculty instructors in CHEM 4313 or CHEM 4101 will assess oral communication competency of students by evaluatiing their oral presentations required in these classes relative to a check list of four essential communication proficiency elements. 80% of students achieving proficiency on all four essential elements will be considered adequate.	100% of all students received a passing grade in the oral communication component of CHEM 4101.	none.	none.
Students will have developed good chemistry problem solving skills.	Strategy 3A. To promote and sustain the excellence of academic programs.	Students will be assigned problems that require balancing equations and calculating molar equivalencies in CHEM 1441 and 1442.	Instructors will review homework problems and grade specific exam questions on this topic and the scores will provide a measure of curricular strenghts and weaknesses. 80% of students providing correct answers to embedded exam questions will be considered an adequate outcome.	For Spring, 2004, 72% of CHEM 1441-007 students answered these questions correctly, slightly below the target of 80%.	Instructors should give somewhat greater emphasis to the balancing of equations in their lectures.	none.
Students completing CHEM 1302 or CHEM 1442 will be able to predict the properties of solutions.	Strategy 3A. To promote and sustain the excellence of academic programs.	Assign students homework problems and give departmental test questions on this topic.	Instructors will review homework problems and grade specific exam questions on this topic and the scores will provide a measure of curricular strengths and weaknesses.	For students in CHEM 1302-003 and CHEM 14442-025 who answered questions involving the properties of solutions, 80.9% answered these questions	none.	none.

				correctly. This was considered to be an adequate outcome.		
Graduates will meet the professional standards for professional baccalaureate programs established by the American Chemical Society	Strategy 3A. To promote and sustain the excellence of academic programs.	All B.S. students must take and pass ACS designated courses.	The undergraduate advisor will ensure that students have the prerequisites to enroll in the courses and will monitor passing rate for students in these courses. A 50% percent pass rate in required courses will be considered an acceptable outcome.	From the academic year 1999-00 to 2003-04 the percent F's given to Chemistry majors in ACS required courses was 11.8%. The percent F's and W's was 28.8%.	none.	none.
MS - Chemistry						
Student Competencies: MS chemistry						
Graduates with a MS in Chemistry will have demonstrated the ability to perform research.	Strategy 3A. To sustain and promote the excellence of academic programs.	Require graduates to work with faculty members on research projects, submit written reports, and orally present the results.	A committee of three faculty members will be assigned to each MS student to assess that students ability to perform research by reviewing written and oral reports addressing research accomplishments. The faculty mentor will assess proficiency levels in lab performance, data analysis, literature knowledge, and interpretative skills. The Graduate Studies Coimmittee will monitor students' progress in coursework.	For the 2003-04 academic year, each student in the second year or beyond performed research with a faculty mentor, and each student gave an oral and written presentation of his/her research to a committee of three faculty. Eight students either passed their yearly review by a committee or	none.	none.

				graduated. Two students dropped out of the program due to grades, and one left for personal reasons.		
PHD - Applied Chemistry						
Student Competencies: PhD chemistry						
Graduates with a Ph.D. in Chemistry will have demonstrated the ability to carry out independent research.	Strategy 3A. To promote and sustain the excellence of academic programs.	Require graduate students to formulate independent research projects, submit written research proposals on these projects, and orally present research progress in front of a committee of research faculty. Assign students to core courses and electives by the Graduate Advisor. Additional courses such as CHEM 6101 and CHEM 6102 will expose students to issues and topics relevant to independent research. Selection of a faculty research mentor. Assign research projects and mentor student in acquisition of research skills.	A committee of five faculty members (including the mentor) will be assigned to each doctoral student to assess that students ability to perform research by reviewing written and oral reports addressing research accomplishments. The Graduate Studies Committee will monitor progress in courses.	Twenty two students either passed their yearly evaluation by a committee of five faculty or graduated. Four students passed their yearly evaluation conditionally (typically, these students are required to be evaluated again in six months). One student left the program for personal reasons.	none.	none.
BS - Biochemistry						
Student Competencies:						
Computer Proficiency: Upon graduation these majors will demonstrate proficiency in computer	Strategy 2B. To promote and support a student-centered academic community that enables	Require Chemistry majors to take GEOL 1491, or CSE 1301, or the University Computer Proficiency	Undergraduate Advisor will track and assess graduates in chemistry and biochemistry for	For the academic year 2003-04, 100% of all students satisfied		

skills as demonstrated by successful execution of specific computer based assignments. Assessment to be based on performance in courses such as Quantitative Analysis (CHEM 2335) and Instrumental Analysis (CHEM 4461).	students to achieve their educational goals	Exam. Also courses such as Quantitative Analysis and Instrumental Analysis where students learn spreadsheets etc.	competency in computer skills by evaluating and ensuring completion of GEOL 1491 or CSE 1301, or by receiving a passing grade in the University Computer Proficiency exam. Performance in Chemistry courses where computer proficiency is required (see above) will also be assessed. 80% of students passing GEOL 1491, CSE 1301 or computer proficiency exam will be an adequate outcome.	the university computing literacy requirement. 80% of all students passed CHEM 2335 and 100% of all students passed CHEM 2285.		
Communication Skills: Upon graduation, majors will demonstrate proficiency in communication skills as demonstrated by oral presentations and examinations.	Strategy 2B. To promote and support a student-centered academic community that enables students to achieve their educational goals.	Require Chemistry majors to take CHEM 4313 or CHEM 4101, which are seminar courses designed to improve oral communication skills.	Faculty instructors in CHEM 4313 or CHEM 4101 will assess oral communication competency of students by evaluating their oral presentations required in these classes relative to a check list of four essential communication proficiency elements. 80% of students achieving proficiency on all four essential elements will be considered adequate.	100% of all students received a passing grade in the oral communication component of CHEM 4101.	none.	none.
Students will have developed basic biochemistry lab skills in addition to chemical knowledge.	Strategy 2B. To promote and support a student-centered academic community that enables students to achieve their educational goals.	Require students to take Chem 4242 Laboratory Techniques in Biochemistry	Lab exam will be administered to test the students skills in biochemical techniques. A set of embedded lab skills will be used as a tool for	Assessment was incomplete because the biochemistry faculty member scheduled to	Clearly inform and instruct the instructor of the nature of this assesment and monitor the	none.

			evaluating the course effectiveness.	teach Chem 4242 became unavailable. The adjunct instructor hired to teach the course was not fully informed of her obligations for this assessment.	progress of the assesment during the semester.	
Same as for BS in Chemistry	Same as for BS in Chemistry	Same as for BS in Chemistry	Same as for BS in Chemistry	71% of biochemistry majors answered these questions correctly. This was slightly below the target of 80%.	Instructors should give slightly greater emphasis on this subject.	none.

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