

1. CHANGE OR IMPROVEMENT IN OVERALL PROGRAM WEAKNESS

Weakness: A major weakness in our Program is the poor student engagement in faculty sponsored research leading to scholarly publications in refereed journal. Research publications and conference presentations by students are strong indicators of superior student performance by undergraduate chemistry majors between fall 2003 and 2005, the department averages 1 student co-authored publications per year and almost zero conference presentation.

Strategies

1. Acquisition of Sci-Finder to enhance research and literature search by q students and faculty (\$30,000) (Fall 2006)

2. Modification of CHEM 4051-4061 an independent research course to build on application of chemistry knowledge to solve research problems, critical thinking skills. Students produced both oral and written presentations fall 2005

Introduction of weekly so seminar with Invited speakers in diverse chemical fields to give presentations to our student

Provide support for student's engagement in faculty sponsored research activities. Fall 2006

Acquisition of a 400 MHZ FT-NMR machine through NSF grant (\$250,000.00) to improve teaching and research capability of our faculty and students.(fall 2006)

Formed Core Research Partnership with Major Institutions to engage our students in cutting Edge Research ex. Center for Environmental Beneficial Catalysis in fall 2006, Minority Leaders in nanocomposite Projects Fall 2007.

Faculty Sought training funds to support students engagement ex NIH-RISE (\$600,000) 2006-2010, Welch 2005-2010 (\$25,000 per year)

Results

	2003	2004	2005	2006	2007	2008
Chemistry majors (enrollment)	24	30	20	44	50	58
<u>Students Research Presentations</u>	0	1	2	3	4	5
Students Co-authored Publications	1	1	2	3	7	7
Active Grants by Faculty	2	3	3	4	5	6

Increased students presentations, scholarly publications and research engagement

2. CHANGE OR IMPROVEMENT IN STUDENT LEARNING

Weakness: Poor performance especially in the Freshmen General Chemistry classes and Laboratories and students not able to demonstrate the desired learning outcome in those courses needed to advance to higher level chemistry course. (Based on fall 2003-2005 assessment)

Strategies.

- a. In fall 2006, we created an honor section for CHEM 1033 and 1043 to challenge students with advanced preparation and background.
- b. we started using common syllabus for multi section courses including common final examinations with embedded assessment tools beginning fall 2006
- c. In spring 2007, Free Laboratory manuals were provided to students in all freshmen chemistry Laboratories to ensure all students complete pre-laboratory experiments and are well prepared before each laboratory.
- d. Through funding from US Department of Education, we started tutoring services in the chemistry department in fall 2006. Master tutors were trained to tutor students enrolled in the general chemistry courses. The tutoring center now operates full time and has significantly helped improve students retention rate and success rate (Evidence provided in report submitted to US Department of Education-MSEIP grant)..

Results:

Percentage of students' performance on embedded assessment questions on basic principles and chemistry concepts. Fall 2008 and Spring 2009 , 71% N=258
71% of class performed at satisfactory level in fall 2008 spring 2009 (scored 70% or above in embedded questions to test expected learning outcomes)

Percentage of students performance on embedded assessment questions (gen. chem.. 1033, 1043) (#8,13,28,31,33,and 36)for Fall 2007 and Spring 2008 Basic Principles and chemistry concepts. 2007 68% N=246; 2008 69%, N= 162