The Department of Chemistry and Biochemistry underwent a review of its graduate program during the spring of 2009. The review was based upon an extensive self-evaluation prepared by the Chair of the Department as well as face-to-face meetings and responses to questionnaires involving all of the stakeholders. The Review Committee was comprised of Dr. Michael Farmer (Chair), Dr. Calvin Barnes, Dr. Darryl James, and Dr. Max Diem (external; Northeastern University). This document describes the steps that have been taken during the past two years by the Department of Chemistry and Biochemistry in response to recommendations of the committee. It follows the initial report submitted by Chairperson Dominick Casadonte on April 17, 2009 in response to the findings and suggestions of the Committee.

In keeping with the format of the initial report, this document discusses actions that have been taken under each of the changes suggested by the Committee (in boldface). The Departmental Responses are in italics.
1. Guarantee assistantships for 12 months. The department currently finds non-State sources to accommodate 12-month stipends, but these solutions are inexact and insecure. Texas Tech should commit to providing 12-month stipends for all supported graduate students. Increase number of teaching assistantships to account for increasing number of undergraduate laboratories. Guarantee assistantships for 12 months.

In the fall of 2009, the Department began to extend offers that guarantee 12 month assistantships to all prospective graduate students. Thus far, the obligation for ensuring support during the summer months has been met by a combination of funding from (1) research grants directed by the research advisor (2) departmental teaching assistantships and (3) incentives provided by the Graduate School and the Office of the Provost. In particular, support from the Graduate School and the Office of the Provost for students completing dissertations during the summer months has been helpful, as the programs have freed grant and other Department funds for use in supporting graduate students in their first year. Additionally, the College of Arts and Sciences has committed to covering summer stipends for 3-4 students should such assistance become necessary. To respond to growth in the undergraduate laboratory program, the Department has increased the number of Assistantships offered to the fall 2011 class. Instead of the typical number of 25 students, the department has recruited 30 graduate students for fall 2011. Should its budget be insufficient to accommodate this increase, the Department will reduce its spring 2012 graduate admissions to compensate.

2. Evaluate mechanisms to better ‘streamline’ the path to Ph.D. candidacy so that most students reach candidacy at the end of their second year or beginning of their third.

During the 2009-2010 academic year, the Department used its Roundtable Discussion format and worked with its Graduate Admissions and Affairs Committee to update the requirements for its graduate degree programs. Revisions were made to the Ph.D. program that streamlined the Diagnostic Exam requirements, modified the Cumulative Exam format and reduced the number of courses required from 8 to 6. The changes implemented are consistent with graduate degree programs in chemistry departments at many of Texas Tech’s peer institutions and have increased the competitiveness of the Department of Chemistry and in graduate student recruiting.

3. Outline a sustainable plan with the College and University to repair or replace aging laboratory equipment, both for undergraduate labs and graduate research.

The Department has made advances on four fronts, indicated by A, B, C and D below.

(A) The Department has secured funding through two awards from the National Science Foundation’s CRIF-MU (Chemistry Research Instrumentation and Facilities: Departmental Multi-user Instrumentation) program. The first of these supports a 1164-core computer cluster, which is enabling new projects in computational chemistry. The computing cluster became operational in the fall of 2010. It is housed in newly renovated space that is located within the Department of Chemistry and Biochemistry and additionally provides work areas for 12-15 computational chemistry researchers. The second CRIF-MU award is enabling the purchase of a 400 MHz nuclear magnetic resonance (NMR) spectrometer. The instrument will facilitate the growth of research programs in synthetic chemistry and support the education and training of
students at Texas Tech and regional universities. The instrument has been ordered and delivery and installation is scheduled for the summer of 2011. The College of Arts and Sciences has provided matching funds for the purchase of upgrades that extend the capabilities of the instrument and ensure its long-term maintenance. The Department will continue to seek funding through the National Science Foundation and other granting agencies to equip its laboratories with modern instrumentation.

(B) The Office of the Vice President for Research (OVPR) has reduced the Department’s contribution to new faculty set-up and thereby freed funds – mainly originating from facilities and administration returns from research grants - for the Department’s use in responding better to research instrumentation needs.

(C) In support of its teaching laboratories, the Department has increased its course and laboratory fees, and the Associate Chair for Academics has developed a budgeting scheme to address current and future needs in relation to the repair and replacement of aging equipment. However, in the Department’s upper division laboratories, where the demands for instrumentation are greatest, course and laboratory fees will be insufficient to meet needs and other mechanisms for obtaining funds must be identified.

(D) The Department is taking steps with its advisory council (the Chair’s Council) to engage its alumni in fundraising activities that will enhance laboratory modernization efforts. The Department will work closely with the College of Arts and Sciences Development Office in these fundraising endeavors.

4. Increase the number of teaching assistantships to account for increasing numbers of undergraduate laboratories. This requires quick response from the University when additional TA support is requested; otherwise the lag time places strains on teaching assistants and the graduate program in general.

The TA count is dependent upon the Department’s budget, and the budget has not increased in recent years. The Department’s course fee increase, which became effective during the 2010-2011 academic year, has provided additional funding to aid the teaching mission. As a result, the Department was able to admit a greater number of graduate students for its fall 2011 program. Further details are discussed under #1 above.

5. Increase F&A return (or reduce the department’s contribution to new faculty set-up) to permit purchasing of service contracts for instruments and facilities. Alternatively, devise a campus-wide policy for support of research-grade, multi-user labs. Increase F&A return (or reduce the department’s faculty set-up contribution) to permit purchasing of service contracts for instruments and facilities.

The OVPR has reduced the Department’s contribution to new faculty set-up, thereby freeing resources for use by the Department in responding to research instrumentation needs (see #3, response B above). Additionally, the faculty continues to compete for grants that generate indirect costs and uses its Roundtable Discussion format to develop strategies for pursuing new grant opportunities. Discussions also are being held within the College of Arts and Sciences and
the OVPR concerning the possibility of a campus-wide policy for support of research equipment and multi-user facilities.

6. Continue to work with other departments, the College and the University to maintain multi-user laboratories. Commit staff positions for facility managers / system administrators.

The Department continues to work with other departments in the Sciences and Engineering and the College of Arts and Sciences to maintain and develop multi-user facilities. During 2010, the Department committed one staff position to a full-time System Administrator for its NSF supported computing cluster. Provided the budget continues to allow it, the department has developed a strategy to staff its X-ray facility and reinforce the technical expertise available in its mass spectrometry facility and its instrumentation critical instructional laboratories.

7. Increase faculty lines in both strategic and underserved areas while admitting more flexibility in faculty replacement. Target applications toward, and invite potential graduate students interested in the low-population research areas (i.e., inorganic and the physical/theoretical chemistry divisions), some of which are the department’s choice of areas of excellence. This point should be achievable relatively easily, given that the pool of graduate applications is about 300.

An increase in faculty lines will require resources from the College of Arts and Sciences, the Office of the Provost and the OVPR. In its graduate recruiting efforts, during 2010 and 2011 the Department has targeted students from underrepresented research areas in an effort to increase the number of students from those areas who matriculate.

8. Continue to target applications from under-represented minorities into the graduate program by advertizing the graduate program specifically at south/central minority institutions. The STEM programs should produce some results soon in this direction. Target applications from under-represented minorities into the graduate program by advertizing the graduate program specifically at south/central minority institutions.

Improving minority recruiting of graduate students is an ongoing effort. The Department recruits at local HBCU’s and HHCU’s, as well as at our regional and national American Chemical Society (ACS) meetings. Faculty in the Department also participate in a variety of outreach programs (i.e., TTU’s Mentor Tech, Science It’s A Girl Thing, and Women in Science and Engineering programs and the ACS’s Project SEED program) for students underrepresented in STEM disciplines that aim to attract them to these disciplines at an early age.

9. Continue several initiatives that improve transparency, faculty engagement and faculty democracy including:

a. Faculty Merit Evaluation Committee;
b. Consider Publishing an Annual Research Report;
c. Continue to broaden external funding sources (e.g. NIH);
d. Maintain and buttress faculty Mentoring, such as proposal review.

*These items are certainly being continued. Specifically:*

1) The Merit and Productivity Committee in the Department was tasked with exploring differential teaching loads. The Department’s guidelines were revised in early 2010 and became effective at the start of the 2010-2011 academic year.

2) The department is working to more widely disseminate the Annual Report to its Chair’s Council.

3) Researchers in the Department continue to explore new funding agencies and are working to obtain NIH funding. During 2010, Professor Yehia Mechref, who was recruited to the Department as a strategic hire, brought NIH funding from his prior position as Director of the Glycomics and Proteomics Center at Indiana University. Professor Mechref has additional grant applications pending, and he has been active in mentoring the Department’s young faculty to assist their efforts to secure funding from NIH and agencies that support research in the biomedical sciences.

4) The Proposal Review Committee has been strengthened and improved mechanisms for mentoring pre-tenure faculty are continuously being explored.

10. Increase the number of ‘sweetener’ scholarships, to help recruit outstanding graduate student prospects.

*The Department has created a special scholarship as an inducement for the purpose of attracting high quality graduate students to the department. The stipend is slightly above that of the Department’s standard offer and requires the research mentor to cover the summer portion as a research assistantship.*

11. Increase staffing in the Office of Sponsored Programs to help with grant submissions via grants.gov, to effectively administer grants, and help faculty identify possible grant sources.

*This is outside of the purview of the Department. However, the Department is continuing to work with the Office of Research Services and the OVPR to improve grant activities. We also have applied to the Critical Need Hiring Committee to fill one of the Department’s staff vacancies with a person capable of grant account management. Our request is pending.*

12. Re-establish differential teaching loads for non-research active faculty.

*During the spring of 2010, the Department’s Merit and Productivity Committee developed recommendations for differential teaching loads. The recommendations were enacted during the fall 2010 semester (see #9 above).*

13. Cross-list introductory graduate and advanced undergraduate courses to permit more
advanced graduate courses to be offered; explore the possibility for on-line graduate course.

The Department continues to explore possibilities in these areas. In regard to online graduate courses, CHEM 5360 and CHEM 5361, Conceptual Chemistry for Teachers (I and II, respectively), were created and have been offered during the summer 2010 semesters and during the 2010-2011 academic year.

14. A set of milestones and measurable goals need to be established that allows the department to gauge its progress to “top 50” status.

The Department is exploring the use of metrics established by the National Science Foundation and the American Chemical Society as a measure of its progress toward “top 50” status. These metrics are a reflection of the Department’s federal funding levels and publication rate. The Department is working with its Merit and Productive Committee to develop figures of merit and a reporting system for keeping the Department and its Chair’s Council appraised of progress.