CHEMISTRY GRADUATE PROGRAM
GRADUATE COUNCIL FOLLOW-UP PROGRAM REVIEW 2006

A follow-up review of the Graduate Program in the Department of Chemistry was conducted during Winter term, 2006. Elaine Pedersen (College of Health and Human Sciences) and Stephen Hobbs (College of Forestry) met with Douglas Keszler, Department Chair of Chemistry. The purpose of the meeting was to ascertain the extent to which recommendations made in the 2003 Graduate Council Program Review of the Department’s Graduate Program have been adopted. This follow-up report provides a general overview and a brief description of actions that have occurred in relation to the specific recommendations.

Department Overview

In 2003, when the Chemistry Graduate Program was reviewed, the department faced a number of challenges including a building in need of many repairs brought on by low to zero building maintenance funds and a need to refill faculty positions vacated by retirements. The review committee was appalled to find out that the serious building problems that existed in 2003 still existed.

Recognizing the need for additional funds, the Department has been creative in seeking out increased funding. The Department has used funds from restructured course fees, ecampus courses, summer school courses, and returned overhead in order to achieve some of the changes discussed in this report. In order to continue to support the various objectives of the Department, including the graduate program, the Department’s goal is to generate one million dollars each academic year in excess of their base funding.

Since the Graduate Program Review in 2003 the Department has successfully increased the number of graduate students from 57 to 80 students. Three tenure-track faculty have been added to the Department faculty.

Responses to Recommendations from the 2003 Graduate Council Program Review

Graduate Teaching and Advising

A re-examination of required graduate coursework is suggested. Given the size of the faculty related to the various traditional divisions of chemistry, the Department should consider reducing the total number of graduate courses that are offered.

At the time of the Graduate Program Review the majority of graduate programs in Chemistry in the United States required a lower number of credits for course work and a higher number of credits for lab/research work than was offered by the OSU Chemistry Graduate Program. To make the OSU Chemistry Graduate Program more compatible with other chemistry graduate programs, the department successfully sought an exemption from
the Graduate Council for the 36 credit minimum for course work for doctoral students and have reduced their minimum number of graduate course work credits to 27.

As faculty members retire, discipline-specific graduate coursework should be re-examined to insure compatibility with research areas identified as important to the Department and the research specialties of the faculty.

The Department reviewed the specializations of faculty who had retired and who were close to retirement and revised the curriculum. The Department is currently moving from five concentrations (Organic and Bioorganic, Analytical and Environmental, Physical, Inorganic/Materials, and Nuclear) to three concentrations (Organic, Bio-analytical, and Materials). These three areas fit the specializations of the Department’s mid-career faculty and have been the focus of new hires.

Although the courses needed for graduate students will vary according to sub-discipline, an effort should be made to have a common set of degree requirements, for example, the number of courses, research proposals, seminar presentations, cumulative examinations, and so forth.

There are no department core courses because each area of concentration is quite different from other areas. In both organic chemistry and in bio-analytical chemistry graduate students take core courses within their concentration. Core courses are not required in materials chemistry because it is a very interdisciplinary subject area and tailored to meet the needs of individual students.

At the master’s level the degree requirements are the same across all concentration areas. For doctoral students, all students take the same number of required courses, all students are required to participate in the department seminar, and all students who wish to be considered for a GTA take a seminar teaching course. Only the organic and bio-analytical chemistry doctoral students take written preliminary examinations. The materials faculty feel the oral preliminary examination is sufficient to test their students’ readiness for research.

Continued involvement in multidisciplinary and interdisciplinary programs is recommended. This offers graduate students the opportunity for additional coursework and an enhanced graduate and research experience.

Faculty and graduate students continue to be involved across disciplines.

To insure adequate graduate faculty for various divisions and research interest group areas it is critical that new hires be tenure track faculty to insure no further loss of graduate faculty.

Three tenure-track faculty have been hired or are in the hiring process, including the Harris Endowed Chair position. It should be noted that one faculty member will retire June 2006, one faculty member has resigned and accepted a position elsewhere, and two additional
Faculty retention cases are in process. To date permission has not been granted to open a search for new faculty. Regarding the impact of the retirement and resignation, these two faculty members had efforts in two foci areas, organic and bioanalytical, of direct relevance to the health of the graduate program. Thus the impact is related to the Department’s capacity to maintain both its graduate research and education.

**Faculty and Research Programs**

While two of the three hires made in the last five years are women and one is an individual of color, the total number of faculty that are women and individuals of color is low. The Department is encouraged to continue to search for qualified women faculty and people of color as new hires by identifying capable women and individuals of color as recruiting targets as part of their hiring process for the replacement of retiring faculty.

The hire for the Harris Endowed Chair is from an underrepresented group. The other two are white males. The Department chair stated that current department demographics are close to the national average in terms of underrepresented groups.

Although current faculty are productive and successful in acquiring grant funds, the changing needs of industry, the failure to refill faculty positions, and the need to replace faculty who are soon to retire, place research programs in potential jeopardy. If research programs are in jeopardy, so is the graduate program. It is critical the Department be allowed to continue to hire faculty and be provided adequate start-up funds to recruit strong faculty. Substantially higher start-up funding will probably be necessary to attract women and people of color.

The Department was able to offer $600,000 for the two new faculty members and two million dollars for the Harris Endowed Chair position. As discussed in the overview, to continue to have monies available for future start-up funds and other Department needs, Department faculty have made the commitment to try to generate one million dollars a year.

**Graduate Students**

The Department is considering a variety of initiatives. Some of the initiatives can be pursued with few new resources (Chemistry Self Study Report, 2002). The review committee supports these initiatives and recommends their implementation:

- **Re-examination of required graduate coursework and restructuring of GTA workloads.**
  
  The restructuring of the graduate course work was discussed above. The lack of additional funds for GTAs and the increase in undergraduates across the campus needing Chemistry courses has negatively impacted the Department making the restructuring of GTA work loads not possible. Undergraduate service chemistry courses are in high demand and are required for many majors across campus. While the increase in undergraduates in Chemistry courses has brought new dollars...
into the College, the review committee understands the Department is not receiving these dollars. Additional funds for hiring additional GTAs would lessen the currently high workload.

- **Continue to recruit international students.**
  The Department has developed contacts with four universities in mainland China. Each year one faculty member goes to China and interviews students at these universities. Through one on one contact students with English language skills and strong science backgrounds are identified. Generally, three to four Chinese graduate students are admitted to the Graduate Program each year. Additionally, the Department is beginning to establish relationships with several Korean universities.

Other initiatives would require additional resources, but it is clear that if the Chemistry Graduate Program is to remain strong and keep its current status these actions will be necessary. The following are recommended:

- **Hiring more graduate faculty.**
  As discussed above, this has happened.

- **Increase graduate stipends to stay competitive.**
  Graduate stipends were increased 3 percent this January and will be increased 4 percent January 2007. With consistent but small increases for several years the stipends will be closer to the national average.

- **Increase access to advising and faculty interaction during the graduate student’s first year.**
  Students are now required to make a decision about their research focus and subsequent research advisor by February 15 of their first year. Because of this earlier deadline they are more active in taking part in the orientation seminars during Fall term. In these orientation seminars they meet with Department faculty and learn of ongoing research projects. This change has opened up communication between new students and the faculty.

- **Identify potential needs of incoming students and match applicant interests with faculty research.**
  The Graduate Recruitment Committee carefully evaluates applicants and steers incoming students to the mid-career faculty in one of the three identified foci areas discussed above.

- **Provide opportunities for first-year students to learn more about each professor’s research activities.**
  During the Orientation Seminar (discussed above) held during Fall term, new graduate students meet with different faculty members once a week for about six weeks. The voluntary seminar is held during the lunch period and because of its link to the deadline for a research focus commitment (discussed above) attendance is good.
Facilities

While a thorough cleaning would help and an immediate major renovation will provide some relief, the Department badly needs a new facility. Postponement could result in compromising a program of otherwise excellent quality. Therefore, problems with the laboratory facilities must receive high priority. It is recommended existing facilities be rehabilitated and construction of a new facility pursued.

The Chemistry Department is included in part of a capital campaign for a Pauling Science Complex. In the first phase Chemistry will have two floors, and it appears that in the second phase they will acquire a new building. This is still a number of years away, and there are serious facilities problems that still remain.

When the Chemistry Graduate Program Review was conducted in 2003 the Chemistry Building, Gilbert Hall, had serious plumbing and roofing problems. Three years later these problems still exist. This is a major concern of the follow-up review team. Ongoing water problems over a period of years continue to further damage building infrastructure and create a potentially, if not already existent, danger to faculty, staff, and student health and well being. The heavy rains of winter 2006 have potentially added to this risky situation. There is particular concern about the structural integrity of a sky bridge used daily by students traveling between classes. The follow-up review team strongly recommends that the sky bridge and roof receive immediate attention.

As indicated in the 1989 report, the Department must address the safety/health issues of graduate student desk space located in laboratories.

In the 1989 Chemistry Graduate Program Review it was recommended that graduate student desk space be located away from laboratories for health and safety reasons. This change was not made during the years between 1989 and the 2003 Graduate Program Review. This change still has not been made due to lack of space.

Resolving the issue of funding for the three major shared instrument facilities (currently supported via internal and external funding sources) would be beneficial to the department.

Since the review in 2003 there has been a joint hire of an x-ray crystallographer with the University of Oregon. The funding of the various shared instrument facilities is operating under a 50 percent cost recovery program. User fees pay 50 percent, and the Department pays the remaining balance from returned overhead. Faculty support this funding resolution.

Administration
Given that most graduate students hold GTA and GRA appointments in the Department and the importance of these positions to the research and teaching missions, the Department might consider ways to increase graduate student involvement in Department activities. For example, the Department might consider graduate student participation on the Long-range Planning Committee or other committees as appropriate. Graduate students offer perspectives and insights that can represent valuable contributions to the Department.

Graduate students are now active on the Department safety committee and the seminar committee. Students have the role of inviting and hosting outside speakers.

**Other – Electrical and Machine Shops**
The Department needs to locate sustainable funding to support shop needs particularly in the machine shop area.

The shop facilities are operating under the 50 percent cost recovery system used for the shared instrument facilities described above. External funding is used to help support these shops.