

Department of Chemistry and Physics Executive Summary of Academic Plan 2005 – 2010

1. New Programs and Initiatives

Chemistry. For the 2005-10 period, the Chemistry & Physics Department will begin implementation (jointly with the Biology Department) of a B.S. degree program with a major in Biotechnology. This new interdepartmental degree will draw from the strengths of the Biology Department and the Department of Chemistry and Physics. The degree offers a balanced curriculum that has a sound foundation in mathematics and chemistry. The “theory-into-practice” curriculum has been designed to be relevant to contemporary challenges and issues in Biotechnology.

Physics. For the 2005-10 period, the Chemistry & Physics Department will begin investigating the feasibility of joint program in physics between UNCP and FSU. Presently UNCP has a BS in Applied Physics and FSU does not have a BS in Physics. Historical, degree programs in physics have low enrollments, and a joint program would allow students at both schools the opportunity to pursue a degree in physics with the excellent resources available at each school. This initiative would be an example of dual programs as recently proposed by the Office of the President. The Department will also seek permission to consider additional tracks beyond its present computational science track. Areas such as nanotechnology and optical physics are becoming important fields during the next 10 years.

2. Related Themes

Our Department's established, new and planned programs are relevant to all of the six planning themes identified by the University, most directly to those listed below:

--Preparing knowledgeable managers and professionals for the future to ensure economic development.

--Understanding the impact of science and its relationship to ethics, the environment, everyday

life, public health, public policy, religion, and technology.

--Viewing the Liberal Arts as the basis for both critical thinking and life-long learning skills.

3. Required Resources

The phased retirement of our organic chemist will be complete in the 2006/7 academic year. This, in addition to the recent retirement of our physical chemist and the substantial enrollment increases in general education and major courses, will necessitate the addition of a minimum of two new full-time, tenure track faculty in Chemistry (one in organic, one in physical chemistry) in the coming 2005-2010 period. These new faculty will be critical to the successful continuation and expansion of Department activities during the 2005-2010 period. The estimated annual cost for these two positions is approximately \$140,000 (salary and fringe benefits). Additionally, the expansion of our Department's instrumentation holdings has continued to the point of requiring a staff position (e.g., "Instrumentation Specialist") whose primary duties would include the maintenance and operation of lab equipment and instruments. Such duties have to date been delegated to our lab manager and various faculty members as "overload", and more recently to our jointly funded laboratory teaching associate, but the combined impacts of enrollment and inventory growth make this arrangement increasingly unacceptable. We anticipate this position to require a master's degree in a physical science or related field, or a bachelor's degree with extensive relevant experience, and estimate the annual cost to be approximately \$60,000 (salary and fringe benefits).

Reliable supply and equipment budgets will become increasingly important to the effective implementation of the Department's expanded program activities, reasonable estimates being approximately \$50,000 for equipment (including ongoing maintenance and repair service costs for major equipment) and \$25,000 for supplies annually. Further in this regard, the need exists to update equipment holdings for upper level physics laboratories associated with B.S. in Applied Physics degree program. For this purpose, an estimated \$40,000 one-time equipment expenditure and a continuing \$5000 annual supply budget are needed.

An expanded faculty development budget will be required to permit professional growth of Department faculty appropriate to the expanded Departmental programs and activities. A

realistic estimate for these funds would be \$1000 per faculty member per year, for a total of \$13,000 annually.

Finally, the continued expansion of programs and faculty resulting from enrollment growth will require additional office and laboratory space. Though the Oxendine Science Building was just renovated and expanded, it is important to note that three laboratory spaces designated for research were left unfinished due to unforeseen budgetary overruns. Subsequent to reoccupation of the building, two of these three spaces (SCI 1108 and 3121) were reallocated to other departments and programs (math/science education and geology/geography, respectively). The remaining unfinished space, SCI 1103, remains unfinished despite a Special Project Request filed in the Fall 2004 semester. It is essential to the continuation and expansion of our faculty and undergraduate research effort that this space be completed immediately. Further, the addition of new faculty (see above) will require additional research and office space. Chairs of our Department and the Biology Department have agreed that the space presently occupied by University Computing and Information Services would be an ideal area to share between departments for this purpose, and we will petition for such reallocation of this space when UCIS relocates.

4. New Structure or Organizational Changes

The beginning of the 2005/6 academic year will see two changes in the organizational structure of the Chemistry & Physics Department, i.e.:

- a) a separate Department of Geology & Geography will be established, hence the associated faculty, curricula, and programs will no longer reside within the Chemistry & Physics Department; and
- b) science education curricula and programs will be officially transferred to the Biology Department.

5. Anticipated Student Demand.

The number of students majoring in degrees offered by our Department has more than doubled during the past decade, outpacing the overall university enrollment growth of approximately 65% over the same time period. Considering this trend, the predicted enrollment

growth for UNCP, the addition of new programs that require service courses through our department (see section I.A. above), and the current status of the economy, a prudent assumption would be that our Department's enrollment will continue to grow at the same or perhaps a slightly lesser rate over the next five years. If these assumptions are accurate, enrollment in courses offered by our Department may increase by approximately 25% during the 2005-2010 period.

6. Interdisciplinary Collaboration

The interdisciplinary B.S. program in Biotechnology that is being implemented in the Fall 2005 semester (see section B.1 above) entails extensive collaboration with both the UNCP Biology Department and several off-campus organizations (NC Biotechnology Center, various biotechnological industries, etc.).