

COMMITTEE ON EDUCATIONAL POLICIES AND PLANNING (CEPP)-
Motion for the separation of the Chemistry and Physics Department
February 7th, 2003

MOTION

CEPP moves that Skidmore College divide the Department of Chemistry and Physics into a separate Chemistry Department and a separate Physics Department.

RATIONALE

Historical and pedagogical overview

A review of the history of the Department of Chemistry and Physics reveals that the arrangement at Skidmore under which chemistry and physics are taught under the auspices of a single department did not arise from recognition of any pedagogical strength in this model, nor from any generally accepted notion in the sciences that such a model was effective in fostering the growth or excellence of either discipline. Rather, it was an arrangement of convenience, based on the fact that physics was a service program prior to the establishment of a physics major in 1989. Indeed, the first external review of the Department in 1987, by scientists from Hamilton College and SUNY Albany, noted, "It was surprising to discover that chemistry and physics were combined in one department. Most, if not all, colleges with first-rate science programs have separate physics departments ..." Although both disciplines are part of the physical sciences, they occupy significantly different niches at the undergraduate level. Physics courses are broadly fundamental in nature and emphasize mathematical analysis into the junior and senior year; chemistry courses, by contrast, begin to specialize at the beginning of the sophomore year, emphasizing training in laboratory techniques (witness the number of chemistry courses with four-hour laboratory sessions) in addition to teaching fundamental concepts. While there can be important interdisciplinary overlap (for example, in materials science and photonics) at the graduate level, the two disciplines simply do not intellectually share much at the undergraduate level. Typical of institutions that grant the B.A. in sciences, no chemistry courses are required for the major in physics; the major in chemistry requires one year of physics at the introductory level. Moreover, although at one time astronomy or an occasional physics lab section was taught by a chemist, such cross-disciplinary teaching has not occurred since 1994. The programs are autonomous and independent of each other.

Subsequent to the establishment of a major in physics in 1989, two additional teams of external consultants and reviewers in the early and mid-1990's strongly recommended to the administration that the two programs should operate through separate departments. Having received the support of the Dean of Faculty, the Department now seeks the approval of the Faculty for this proposal.

External perception of the current configuration

Any "combined" physical science department is reminiscent of a "Science Department" model that one finds at much weaker institutions, and in nearly all high schools. A combined

Department of Chemistry and Physics at Skidmore strongly implies to external observers that Skidmore takes neither chemistry nor physics very seriously. Indeed, Skidmore's physics program is omitted from several national automated on-line listings because it is not offered through a Physics Department. The combined configuration, while not affecting the rigor or excellence of our physics or chemistry programs, does have significant impact on the perception of these programs by prospective students and their parents, graduate schools, external funding agencies and peer-reviewed scientific publications.

During the last 2 years, prospective students and their parents have asked the reason for having a combined chemistry and physics department and have wondered how it will affect students' prospects for getting into good graduate schools. When submitting manuscripts to peer-reviewed journals, some chemistry/physics faculty have been asked to explain the sophistication of the research data, which is perceived as coming from an undergraduate "physical sciences" department. In applying for program-specific research grants, the level of commitment to research, the extent and nature of the equipment, the availability of research space, and the constraints on faculty time have been raised as issues emanating from our status as a "physical sciences" department. Similar issues have been raised with chemistry/physics majors while interviewing for top graduate programs. Current majors, sensing these issues as important for their careers, strongly endorse the establishment of separate departments and have taken the issue seriously enough to discuss it at SGA's Academic Council and submit a petition to the department supporting the separation.

Comparison to cohort schools

Skidmore stands alone among the top (and even second or third tier) US liberal arts colleges in this regard. Among the other top 100 liberal arts colleges listed in US News and World Report, only Mills College, ranked lower than Skidmore, has a combined Department of Chemistry and Physics. On the other end of the scale, institutions that have a joint Chemistry-Physics department include Pace University (Pleasantville campus), Mt. Vernon College (OH), Nazarene College and Winthrop University (SC) to name a few. None of these institutions offers a bachelor's degree in physics. Almost all liberal arts colleges with strong science programs recognize the centrality of physics among the natural science disciplines and support programs that assure its vital presence in their curriculum. Skidmore College is definitely one such institution that prides itself in the strength of its sciences. The four-member external review team from cohort institutions (a team consisting of chemists from Bates College and Mount Holyoke College and physicists from Union College and St. Lawrence University) that visited the department in 1993, strongly emphasized that creation of separate physics and chemistry departments will make both programs stronger and more visible, a goal that Skidmore has espoused since the Commission on the 90s.

CURRICULAR CONSIDERATIONS:

The establishment of separate departments will not decrease either the rigor of the chemistry and physics programs or the overall quality and diversity of courses offered. Our efforts towards periodic review, assessment and strengthening of the program will continue to evolve. Both physics and chemistry faculty have been contributing significantly to interdisciplinary programs and liberal studies programs. We do not expect this participation to be lessened in any way by the establishment of the two departments.

FINANCIAL CONSIDERATIONS:

The two programs have had separate operating budgets for more than 20 years, with no exchange or transfer of funds between the two.

The two departments will continue to share the services of our current Administrative Assistant and we foresee no need for additional secretarial or support staff.

The present Chair of the combined Department is a chemist who will chair the newly created Chemistry Department with the present ten-month appointment. A Chair for the newly created Physics Department will need to be appointed. We anticipate that this will be a nine-month appointment with the usual reduction in course load. The Lubin Family Chair for Women in Science, which receives a one-course reduction in load, currently resides in Physics. As this endowed chair will migrate to another science department from Fall 2003, the Physics Department will recoup one course per year.

No member of the department has a joint appointment in chemistry and in physics. Upon separation, the Chemistry Department will have six tenure-track faculty and two teaching associates; the Physics Department will have three tenure-track faculty, a fourth in a visiting position through 2004-2005, and a teaching associate.

The two programs have no shared laboratory, teaching, or faculty office spaces that would need to be apportioned after creation of separate departments. The immediate infrastructure cost will be in the creation of an office for the Physics Chair. We propose to do this by renovating and reconfiguring the present department office space, at a cost estimated by Facilities Services to be \$10,800, plus an additional \$2200 for furniture.

Physics and chemistry programs already have student assistants and tutors included in their separate budgets; there will be no change or increase in this line.

Physics and chemistry programs have separate fully endowed annual prizes.

Physics and chemistry have separate affiliated student organizations (a Society of Physics Students chapter chartered by the American Institute of Physics (AIP) and a Chemistry Club chartered by the American Chemical Society). There is also a chapter of Sigma Pi Sigma, the national physics honor society, chartered by the AIP.

TIME-LINE OF IMPLEMENTATION:

Renovation and reorganization of the Department office can be completed in June and July of 2003 and the independent functioning of the two departments is expected to begin in August 2003.