

THE NEW GENERAL EDUCATION CURRICULUM
Effects on the Physics and Astronomy Dept.
May 2003

I. Obligations

A. Communication course

All students will be required to take a course that “integrates writing and speaking into the subject matter in evident and important ways.” (This is in addition to the Rhetoric A/B, or “freshman comp” courses that all students must take or place out of.) This course is to have “an emphasis on written and oral communication [that] would prepare students to write and speak effectively in their disciplinary area.” In order to fulfill this requirement, such a course must have the communication of its content form a substantial portion (at least 20%) of the grade for the course. The emphasis of the course must be on the content as well as on the way in which the content is communicated. Written and oral assignments should reflect course content and be part of the cycle of writing or speaking and revising in response to feedback and discussion. Courses that incorporate communication only in the form of one research paper and/or oral report at the end of the term, or written and oral reports with no opportunity for revision, will not meet the criteria for this requirement.

Students are allowed (in fact, strongly encouraged) to fulfill this requirement with a course that also fulfills a requirement in the major. This means that one or more of the courses that we require our majors to take must be modified to meet the criteria for this requirement. It would be best if the courses chosen were those taken only by physics majors, so that we only expend our efforts on the students who will not get this instruction elsewhere. We should provide both our AB and our BS students with ways to fulfill the requirement without taking any additional courses.

For the BS majors, one possibility is to modify P143L to include the writing and revising of one or more papers (perhaps a review of the literature pertinent to the research activity), and/or the preparation and revision of an oral presentation on the work the student has done. Since not all AB majors take this course, another solution must be found for them.

The target date for implementation of the new curriculum is Fall 2006. If we choose only upper-division courses to fulfill this requirement, then we would need to have the modified syllabi approved no later than Fall 2008.

B. Administrative review

In order to implement the new curriculum, all courses that are to fulfill the new requirements must undergo review by the Administrative Boards of the General College and the College of Arts and Sciences (as do all new courses at present). This means that for each such course, we must submit a syllabus and a course description that describes how the course meets the criteria for the requirement in question. For the Physical and Life Sciences requirement this means we should submit forms for all courses numbered

P27 or below (and A31)*, and for any other courses we think students might wish to use to satisfy this requirement. For the Communication requirement, we must submit forms for whatever courses we have modified to fit the criteria (see above). An on-line submission system is being developed to avoid overwhelming the Office of Undergraduate Curricula with paper.

All students must also fulfill a Quantitative Methods requirement (beyond the basic requirement of one mathematical sciences course). A course that fulfills this requirement must use quantitative methods to model and solve problems using numerical reasoning, collect and interpret quantitative data, and/or use mathematical analysis. Essentially all of our courses will meet these criteria without modification. Since students may fulfill this requirement with a course that also fulfills another requirement (in either general education or the major), we should include a description of how these criteria are met when we submit forms for any of our courses.

II. Opportunities

A. More general education students

The new curriculum will require most students to take more science courses than they do at present. Under the current curriculum, all students must take two science courses (at least one with lab). Students pursuing an AB degree in the College of Arts and Sciences (this is about 60% of all students) must take four additional courses from five areas, one of which is science (these are known as the “Arts & Sciences Perspectives”). Given this choice, most students avoid taking another science course (choosing social science, history, philosophy, and literature/fine arts instead). The new curriculum preserves the two-science-course requirement for all students. However, in the new curriculum, all AB students in the College must take three additional courses (referred to as “Supplemental General Education”), one from each of the Divisions of the College outside their major. Any course in the Division may be used, except those that are primarily intended for first-year students. This means that all students pursuing majors in the Division of the Humanities, the Division of the Social and Behavioral Sciences, and the Division of Fine Arts must take a total of three science courses, which will result in an increase in the total science and mathematics enrollment.

Given the large number of students that Biology, Chemistry, and Mathematics already serve, it is unlikely that those departments will make a significant effort to accommodate this increase. Departments with smaller enrollments, such as our own, have an opportunity to attract these students if we offer courses that seem “friendly,” particularly if these courses have visible connections with other areas of knowledge that students are interested in. P16, P18, and P113 are good examples, and we can undoubtedly come up with new classes that would be appealing. A31 can also expect increases in enrollment, as it is a subject of perennial interest to many people.

* Note that at the same time as the new curriculum is implemented, all courses in the College will be renumbered.

B. Cluster program

As an alternative to the Distributive option described above (three courses from Divisions outside the major), Arts & Sciences AB students may elect the Integrative option for their Supplemental General Education. In this option, the students take an approved 9-credit-hour interdisciplinary Cluster of courses linked to one another by a common theme. These courses must be taught by faculty from at least two different Divisions or Schools, and it is recommended that at least one of the courses in the Cluster be team-taught. Examples of potential Clusters include “Evolution of the Cosmos” (with faculty from our department, Geology, Biology, and Religious Studies), “Chaos” (with our faculty plus some from Mathematics, Economics, Sociology, and Environmental Science), “Time” (our faculty with Philosophy, Geology, English, and History), or “Technology” (our faculty with History, Archaeology, Economics, and Art History). A well-designed Cluster would bring in students who might otherwise avoid physics and astronomy courses, and would afford our faculty an opportunity to interact with colleagues in other departments. The potential intellectual merit of such teaching, for both the students and the faculty, is quite high.