



IMPAC

INTERSEGMENTAL MAJOR PREPARATION ARTICULATED CURRICULUM PROJECT NEWSLETTER

A SCIENCE ALTERNATIVE TO IGETC?

By DICK WILLIAMS, IMPAC FACULTY COORDINATOR

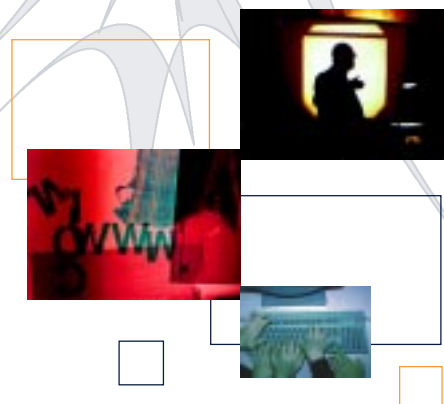
Several years ago three systemwide offices, the articulation community, and ICAS (Intersegmental Committee of Academic Senates) collaboratively developed the IGETC (Intersegmental General Education Transfer Curriculum). Community college faculty and staff use this transfer pattern to advise students so that they may transfer to the University of California (UC) or the California State University (CSU) with credit for all lower division general education requirements. IGETC has helped many community college students prepare to enter the UC or the CSU and, according to recent research, has a high satisfaction rate with transferring students.

The general education requirement should be tailored to the individual needs of our students. In its wisdom, ICAS did not specify a set of courses so much as a philosophy for those courses and suggested ways to complete the IGETC. The major and the general education requirements are more complementary than they are separate. The IMPAC (Intersegmental Major Preparation Articulated Curriculum) initiative was created in part to ensure adequate, well-aligned lower division preparation in the major.

Many science and engineering students enter the CSU or the UC having completed IGETC but without having taken the appropriate courses in mathematics and science. As a result, far too many need to take additional science or mathematics course after transfer, retarding their pursuit of the major; further, students may have lost skills they had when graduating from high school because of this deferral. In the long term, either their graduation will be delayed, or they will change their majors (at a critical time when the state needs many more scientists and engineers).

IMPAC has begun asking the question, is it possible to create, for the students in science intensive majors, a science-oriented IGETC? This year, the IMPAC participants, particularly those in Science Clusters I and II, will explore this question, examining how such a transfer pathway might be constructed. The following proposal is one of several configurations likely to be explored.

Like the more general IGETC, a science preparation should have heavy emphasis on writing and speaking (especially in exposition and argumentation) as well as on information competence; this would take nine to twelve SCH (semester credit hours). It



IMPAC PROJECT

The Intersegmental Major Preparation Articulated Curriculum (IMPAC) project is a unique intersegmental, faculty-designed and faculty-run project to ensure that students transferring from the community colleges to UC and CSU are prepared for work in their chosen major and can avoid having to repeat coursework. The project is funded by a five year, \$2.75 million grant that enables faculty from the three higher education systems to meet regionally to discuss issues, concerns, and academic procedures that impinge upon the transfer of students in those majors. Specifically, the grant funds regional and state-wide faculty disciplinary and interdisciplinary discussions to address prerequisite and lower division courses students must complete prior to transfer to either CSU or UC. This newsletter highlights some of the issues identified at the regional and statewide meetings. Meeting dates and locations as well as meeting minutes are posted on the IMPAC website at <http://www.cal-impac.org>.

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PROGRESS MADE IN THE DEVELOPMENT OF AN INTEGRATED CHEMISTRY COURSE FOR THE NURSING PROGRAMS

BY LOUISE TIMMER, LEAD FACULTY FOR NURSING

November 17 was a very productive day for the second annual regional meeting of the Nursing Discipline involved in the IMPAC Project. One of the six articulation and transfer concerns identified at last year's regional meetings is the need for an integrated chemistry course as a prerequisite for the nursing programs in the California Community College and California State University systems. A meeting was held between the nursing and chemistry faculty to discuss the feasibility of developing an integrated chemistry course that included inorganic and organic chemistry with a major emphasis on biochemistry. Dr. James Armstrong, Chair of the Chemistry Department at San Francisco City College described his integrated chemistry course that many pre-nursing students take. The course was developed at the request of the campus nursing program.

The general consensus of the chemistry faculty was to pursue the development of an integrated chemistry course that could serve as a CAN course, and meet the requirements for an IGETC course and a general education course. It was suggested to form an IMPAC subcommittee of the two disciplines to work on the development of an integrated chemistry course. Professor Louise Timmer (Nursing Discipline Coordinator) and Professor William Fink (Chemistry Discipline Coordinator) will form a subcommittee of faculty from nursing and chemistry to work on the development of an integrated chemistry prototype course. Professor James Armstrong will convene the committee. It is anticipated that the integrated chemistry CAN course can be developed before the last IMPAC meeting in April 2002.

COMPUTER SCIENCE FACULTY ATTEND INTERSEGMENTAL MEETINGS

BY JOHN TARJAN, LEAD FACULTY FOR COMPUTER SCIENCE

While many faculty teaching in the computer science field attend a variety of professional meetings, IMPAC offers a unique setting in which faculty from universities and community colleges can meet together and discuss curriculum and transfer/articulation issues. Meetings between University of California, California State University and California Community Colleges were held in San Diego, Fullerton, Oakland and Bakersfield, with a statewide meeting near the Los Angeles Airport. Participants were enthusiastic about the discussions and look forward to meeting again in the current school year.

Lower-Division Cognates

Several issues were discussed regarding cognates. Most faculty prefer a year-long physics series, although there was general agreement that the chemistry series could substitute. Coverage of topics in the physics series is a difficult issue, with many of the topics of interest to computer scientists often covered after the first year sequence. Physics faculty were sympathetic but face a difficult task designing an optimal sequence for a variety of majors. There was strong agreement that the sequence be calculus-based and that computer science majors take the same sequence as engineering and/or physics majors. The same sentiment was expressed about the calculus series. The rigor of physics and mathematics is thought to be an ideal preparation for the computer science upper-division coursework. The group outlined a set of topics to be covered in a discrete math course for computer science majors (see below).

The Language Problem

Coming to agreement on computing languages to be used in lower-division coursework was viewed as impossible. There is too much variety among baccalaureate programs. Several universities combat the problem by designing "bridge" courses for transfer students to get them up to speed. This may be the best solution giving the constantly evolving nature of the field.

Community College Perspectives

University faculty were able to gain a much better understanding of some of the problems faced by community college faculty. For example, courses at two-year campuses often have to serve several populations (e.g. certificate students, Computer Information Systems majors, Computer Science majors, non-majors). They also share similar staffing problems that university departments are encountering. A valuable suggestion made by several people is that university faculty post syllabi and textbook titles on a web page. This is the most efficient way to communicate course changes.

California Strawman Lower-Division Curriculum

Borrowing heavily from the Association for Computing Machinery (ACM)/Institute of Electrical and Electronics Engineers (IEEE) Computing Curricula 2001, the statewide group outlined a "strawman" lower-division curriculum for all students planning to major in computer science. The desire was to develop a curriculum that would be desirable for all students wishing to major in computer science to take, regardless of destination institution. In addition, a set of skills and competencies not specifically addressed in a single course were developed. This curriculum should be the source of vigorous discussion and debate during this year's regional and statewide meetings.

FOOD SCIENCE AND NUTRITION

BY JILL S. GOLDEN, LEAD FACULTY FOR FOOD SCIENCE AND NUTRITION

Similar to the other IMPAC disciplines, the Food Science and Nutrition met for the first time last year both regionally and statewide to discuss the discipline. Below are highlights of the discussions.

Dietetics Transfer Degree

The Food Science and Nutrition group had a very productive first year. The four universities reported declining enrollment in the area of nutrition and are interested in promoting transfers from the community colleges. The universities report that employment opportunities are increasing, salaries are up but they are not graduating enough students to meet current needs. The faculty from all institutions strongly supported the development of an Associate of Science Degree in Nutrition. Most of the coursework has been identified and we will continue to work on the degree this year.

Nutrition

A major concern of the community colleges was the absence of a nutrition class that will transfer to the university. Nutrition meets the Life Skills or Science General Education requirement and accounts for a major part of the enrollment in many community college nutrition departments. This nutrition class is used as a recruitment tool at the community colleges. Students often receive no credit toward their major for this class when transferring to the university. The first nutrition class taken by Nutrition majors at the university is often an upper division class. We are still working on this very important issue.

California Articulation Numbers

In addition, faculty reviewed the (CAN) California Articulation Numbers list and suggested the addition of Sanitation and Safety and Introduction to the Professions to the list. Recent changes in food service law require that each food service establishment have one person trained in Sanitation and Safety so the course is now taught statewide as demanded by the industry. The Food Science Technologies and Cultural and Ethnic Foods were also revised to update the course descriptions to reflect current thinking.

Overall we had a great year and are looking forward to upcoming discussions. We encourage all that are interested to attend this year's meetings. If you would like additional information please contact me at jjgolden@occ.cccd.edu or (714) 432-5756.

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should also include courses in citizenship: U.S. History, California and U.S. Government, requiring another six SCH. Any science-intensive pattern should also include exposure to the humanities and fine arts and to the social sciences, comprising another nine to twelve In the science fields themselves, the requirements must be much more specific. Simply specifying nine SCH is inadequate. Engineering, Physics, Chemistry, Geology, and Computer Science majors must take at least a year of calculus plus additional mathematics. Many Biology programs also require calculus. All of these majors specify the major courses in Physics and Chemistry rather than courses designed for the liberal arts major, and they all have a computer requirement of some kind.

Here is a lower division science and mathematics package offered as an illustration:

- ▶ One year of calculus;
- ▶ Additional mathematics course(s) selected from: multivariate calculus, linear algebra, statistics, differential equations, and discrete math/structures;
- ▶ At least one major course in each of Chemistry, Physics, and Biology;
- ▶ A full-year course in at least one of Chemistry, Physics, and Biology;
- ▶ A course in problem solving using a high level programming language.

More specific preparation for the majors (in Biology, Chemistry, Computer Science, Engineering, Geology, and Physics) could be established using this kernel. The resultant General Education package could then be well under the seventy SCH permitted for transfer.

FOR THE LATEST INFORMATION ON IMPAC PROJECT, VISIT OUR WEBSITE AT

[HTTP://WWW.CAL-IMPAC.ORG](http://www.cal-impac.org). WE ARE CONSTANTLY ADDING NEW DISCIPLINE MEETING MINUTES, REGIONAL MEETING AGENDAS, RESOURCES AND PUBLICATIONS OF INTEREST TO FACULTY INVOLVED IN THE PROJECT. MAKE SURE TO VISIT OUR SITE REGULARLY TO GET IN



TOUCH WITH FACULTY WHO RECENTLY ATTENDED REGIONAL MEETINGS, GET CLUSTER INFORMATION, AND CHECK FUTURE MEETING DATES.



WHAT IS ARTICULATION?

MICHAEL STEPHANS, PH.D. CHAIR, SOUTHERN CALIFORNIA INTERSEGMENTAL ARTICULATION COUNCIL
 ARTICULATION SPECIALIST, PASADENA CITY COLLEGE

During many of the IMPAC regional discussions, questions arise about the articulation process and agreements, establishment of local requirements, and the problems associated with prerequisites or case management approaches; moreover, representatives of some colleges and universities appear ready to form or revise articulation agreements but are uncertain as to how to formalize the new understandings they have reached. In an effort to help us all understand the articulation process, the IMPAC Steering Committee has asked Dr. Michael Stephans to prepare the following article.

When people are asked to define articulation, many tend to think only in terms of its most common definitions: “to speak clearly when communicating a concept or idea,” and/or “to form or fit [smaller parts] into a systematic whole.” Actually, the word “articulation,” when used in the milieu of California higher education, can have different meanings and connotations, depending upon the setting, though it proves useful for us to consider the second definition: articulation is, the connecting of various segments of post-secondary education in order to create a “systematic whole” to promote smooth transition for students matriculating from 2- to 4-year institutions.

Such efforts between 2- and 4-year institutions result in a number of different types of articulation agreements.

General Education Breadth Agreements identify those courses that a student can complete at a sending institution (usually a community college) to satisfy General Education Breadth requirements at a receiving institution (usually a 4-year college or university). Courses used in these general education agreements are drawn from a basic group of transferable courses that faculty deem appropriate for baccalaureate credit.

Course-to-course agreements identify baccalaureate-level courses (or a sequence of such courses) that are comparable to, or acceptable in lieu of, specific course requirements at a receiving campus. Successful completion of an articulated course assures the student and the faculty that the student has taken the appropriate course, received the necessary instruction and preparation, and that similar outcomes can be assured, enabling progression to the next level of instruction at the receiving institution.

Major Preparation Agreements specify those transferable courses at a community college that fulfill all or part of the lower-division major requirements for a specific major at a receiving institution. Faculty-to-faculty dialogue is essential to the development of these agreements, as are catalogue descriptions, course outlines, course syllabi, and other forms of documentation. In addition, special requirements relating to major preparation may be included, such as pre-major requirements and/or supplementary admission requirements. As with General Education Breadth and course-to-course requirements, Lower-Division Major Preparation Agreements are developed from the list of courses acceptable for baccalaureate credit.

The process of articulation at both community and senior universities involves many members of each’s academic community. Articulation professionals work in concert with division deans, faculty members, curriculum committees, counselors, and students, as well as with other agencies such as CAN and ASSIST, in order to develop, maintain, and disseminate articulation agreements.

A positive outcome of these processes is to provide articulation information in a timely and accurate manner for all prospective transfer students. As can be seen, articulation is a complex, multi-dimensional, recursive process that indeed attempts “to form or fit [smaller parts] into a systematic whole.” And at the heart of the process is the kind of collaboration and interconnectivity among many members of the academic community that intrinsically promotes transfer student success.

Editor’s Note: IMPAC feels that the articulation officer is vital to connect the discipline faculty on campuses to the articulation process. This year the Steering Committee is working with CIAC to have one articulation officer appointed to serve on each of the sixteen discipline clusters for 2001-2002.

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