

Executive Summary
Conference on Transfer Articulation in Mathematics
At Rutgers on February 8, 2008
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Clarifications of the Transfer Agreement

1. The material in roman type-face is the operational part of the document. The material in italics is not operational.
2. Community colleges are free to offer courses on topics such as differential equations and linear algebra even if some four-year institutions offer courses of the same name at 300-level or above. Credit for these courses will count toward the half the graduation credits required by the four-year college.
3. Each four-year institution is free to evaluate courses offered by community colleges to determine which courses, if any, satisfy upper-level requirements for a major, a minor, a certificate, or for general education. A four-year college may accept a 200-level course as equivalent to one of its upper level courses, but it is not obligated to do so.

A transfer student entering a public four-year institution with an associates degree must be granted a number of transfer credits equal to half the number required by the four-year school for its basic bachelor's degree. Ordinarily this is 60 credits. However, a student having earned an AA degree with 60 credits and entering a four-year college requiring 128 credits, should not be required to take more than 64 credits to complete that basic bachelor's degree. [The transfer agreement notes some exceptions to this rule.]

The term "math intensive major" in the Transfer Agreement refers to a major requiring Pre-Calculus. Many majors in engineering, in the physical sciences, and in the mathematical sciences require substantially more mathematics than that. Such majors might be referred to as "very math-intensive".

Recommendations

1. The professional societies should include discussion of transfer issues in their regular meetings and also sponsor activities following up on this conference. The N.J. Commission on Higher Education should support these efforts.
2. Each college should make public a clear statement of what mathematics is required by each of its majors. This information should be searchable by major so that students do not have to go to many separate catalogs or web-pages to compare requirements. Each very math-intensive major should post clearly what mathematics should be included in an associates degree program so that a transfer student can complete the major in two academic years at a standard full-time course load. In general, students should not attempt more than two upper-level math courses each semester.
3. Those formulating definitions of Elementary Algebra and Intermediate Algebra for the purposes of constructing exit exams should solicit input from the post-secondary mathematics community. Exit exams serve purposes different from placement instruments. Students should realize that placement tests and readiness tests are intended to help them avoid difficulties by steering them to courses in which they have the preparation needed for success.

4. The mathematics community should attempt to reach consensus on the content of courses called "College Algebra" and "Pre-calculus". These courses should focus on preparing students for use of mathematics in statistics and/or calculus. They should not be used to satisfy general education purposes except in cases where students educational goals have changed.
5. A committee should try to describe the nature of courses that might be offered by community colleges to assist students in making the transition to upper-level mathematics courses requiring clear exposition of correct mathematical reasoning.
6. The N.J. Commission on Higher Education should encourage the use of electronic transcripts. Colleges accepting transfer students should record grades as well as local course equivalences in their own student record data bases for each transfer student in order to facilitate effective advising and to facilitate verification of those graduation requirements which specify minimal grades for courses used to meet major requirements.
7. Since statistical methods are now used in many many fields, and since most applications involve large data sets, much modern statistical analysis employs technology rather than hand calculation. For this reason, courses in statistics should stress the meanings of the various statistics, considerations leading to the selection of appropriate statistics to compute, and the interpretation of the output.

Points of Consensus

1. Public institutions of higher education serve many constituencies including students, parents, employers, the public. These constituencies may have different expectations for college education.

Community colleges serve students with very diverse educational backgrounds and very diverse educational ambitions. Only a small fraction move directly from high school graduation to full-time enrollment in a community college and then to full-time enrollment in a bachelors degree college. Interruptions in education are common, as are part-time-enrollment and changes of educational goals. To some extent the bachelors-granting institutions face similar challenges of diversity among their students. It may be unrealistic to suggest to transfer students that they should expect to earn a BA or BS within two academic years at normal course-loads after their AA or AAS.

Because bachelors-granting institutions are expected to prepare students for professional and graduate education as well as for immediate employment, they face pressure from employers and other stakeholders to maintain more demanding standards than may be feasible at two-year institutions.

2. Faculty wish to provide effective education and to see students succeed. Cooperation between sectors will help to smooth the transition from community college to bachelors programs.
3. For effective advising, it is not enough to gather information and to post it in the standard places (catalog, website, bulletin boards, and such). It is crucial that transfer counselors take the initiative to bring information to the attention of prospective transfer students so that they will make well informed decisions both about what courses to take and what schools to apply to.
4. It would be very helpful to have guidelines and agreements about what content

and what standards are expected in courses of the same title. This is especially important for developmental courses and credit-bearing courses at the 100-level. It is also important that course titles distinguish introductory courses from upper-division courses.

5. Because many future K-8 teachers take much of their mathematics in community colleges, community colleges and bachelors institutions should cooperate on the design and implementation of courses for future teachers.

6. The transition from lower-division mathematics to upper-division mathematics is difficult even for students within a four-year program. This transition is particularly difficult for students changing institutions.

7. It would be helpful for faculty teaching lower-division mathematics to have a better understanding of the ways in which partner disciplines (the quantitative social sciences as well as engineering, natural sciences, and mathematical sciences) use mathematics in computation, estimation, modeling, and reasoning.