

Program Review Process Experiment, 2007-2009 Self-Study Proposal

Academic Organization (Department): Mathematics and Statistics	Academic Group (College): Natural Sciences & Mathematics	Date: May 16, 2008
Department Chair: Roger Leezer	College Dean: Jill Trainer	Review Team Chair: Jeffrey Brodd

Self-Study Option

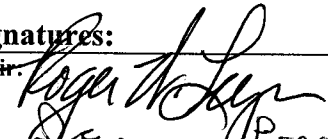


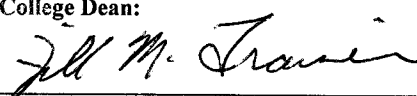
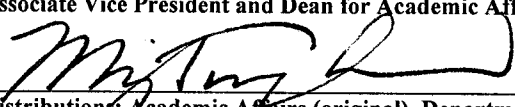
Option A

Option B

Option C

Hybrid of Options (please provide brief description):

Approval signatures:

Department Chair:  Roger Leezer	Date: 5-16-08
Program Review Coordinator:  John M. Quinn	Date: 5-16-08
Review Team Chair:  Jeffrey Brodd	Date: 5-16-08
College Dean:  Jill M. Trainer	Date: 5/28/08
Associate Vice President and Dean for Academic Affairs:  M. J. Taylor	Date: 6/2/2008

Distributions: Academic Affairs (original), Department Chair, College Dean, Review Team Chair. Dean's office to send original after approval to Academic Affairs, at mail zip 6016.

Self-Study Proposal
Department of Mathematics and Statistics
DRAFT - May 13, 2008

The Department of Mathematics and Statistics has decided to choose Option C: Focused Inquiry, as described on pp. 8-9 of the "Program Review Process Experiment" document as the model for its self-study.

Following the Option C format, our Self-Study will include three main sections:

- I. "General information about the program, e.g., data on students, faculty, staff, facilities, etc. (most of which is supplied by Office of Institutional Research)"

The Office of Institutional Research has already provided the Department with a hardcopy of the relevant *Factbook* (also available electronically at the OIR website--- www.oir.csus.edu). All the information gathered will be examined carefully to determine whether there are potential problem areas where we should look more closely or areas where we could make significant improvements. The Department will contact OIR as our data needs become clearer during the self- study process. We will also contact the Alumni Association to obtain a list of our alumni to survey during one part of the focused inquiry section.

- II. "A statement of intended student learning outcomes at the program level; methods for assessing them, including the use of direct measures; assessment results to date; and documentation of the use of assessment results in efforts to achieve program improvement (assistance with the preparation of which is available from the University Assessment Coordinator)"

Here are the Department's current student learning outcomes at the program level. We have made some progress toward assessing them by looking at examples of student work in certain key courses, but many of our efforts are not particularly direct. We believe that by requiring certain courses and teaching them in a particular way the students will accomplish the desired outcomes. The Department will seek the assistance of the University Assessment Coordinator in order to improve our methods. We may need to refine our outcomes to make them more directly measurable and useful in achieving program improvement.

1. The mathematics major at CSUS is expected to develop a fundamental understanding of the process and role of mathematical reasoning.
2. The mathematics major at CSUS is expected to develop a fundamental understanding of the main strands of mathematics.
3. The mathematics major at CSUS is expected to have an understanding of the breadth of mathematics.
4. The mathematics major at CSUS is expected to demonstrate an ability to effectively communicate mathematical thought.

5. The mathematics major at CSUS is expected to demonstrate a basic understanding of technology and demonstrate the skill to use technology.
- III. "The results of a *focused* inquiry addressing issues of particular interest/concern to the program itself, in the context of what is currently important to the college and university."

In this section, the Department would like to look at three different areas for focused inquiries.

1. How are the courses we teach serving the needs of our majors, service course students, and graduates, and how could we make improvements in all of these areas?

This would be accomplished by examining the information gathered in Section I, surveying and interviewing our students, and talking with the other departments for which we teach service courses. The graduate portion would be addressed more completely in our third inquiry. Here is a brief outline for how this inquiry could be broken down.

Our major students (current emphases)

- Pure mathematics
- Applied mathematics and statistics
- Teacher preparation program
- Mathematics and applied computing

Our service course students

- Engineering and science (Math 26AB, 30, 31, 32, 45, 100, and Stat 50)
- Business (Math 24)
- General education (Math 1 and Stat 1)
- Liberal Studies and Child Development (Math 17, 107A, 107B)

Our graduates

- Teachers (secondary and community college)
- Graduate students (our master's students and others)
- Government workers
- Other applied workers

2. What is the role of algebra in particular and mathematics in general in a college education?

All CSU students are expected to complete two years of algebra and a year of geometry in secondary school, but many if not most need some remediation before they are ready to take what we consider are college level courses. What do we expect of our entering students? Are we serious about the secondary school algebra requirements? How do we convey this message to our feeder secondary schools and community colleges? What level of mathematical skills do the SAT, ELM, and other standardized tests measure? How are our own remedial courses (Math 9 and 11) and other preparation courses (Math 29) preparing our students for future mathematics courses?

More generally, should all college graduates demonstrate through appropriate coursework a mastery of algebra skills? If not, then what is an appropriate level of mathematical skills for college graduates and how can we assess it? Would statistics or some other mathematical area be more suitable? Should students be expected to maintain or even improve the level of mathematics skills they achieved in secondary school as they go through their undergraduate college career?

The Department will consult with area secondary schools and community colleges, other interested departments, and the University GE Committee in attempting to answer some of these questions and come up with a plan of action. We understand that some of these issues are under the purview of the state and the system and therefore beyond our control, but nevertheless they are important and we feel that they should at least be considered. None of this should be construed to mean that we would be in favor of some form of exit testing.

3. What types of jobs can and do our majors get after graduation?

Who are the current and past employers of our majors? In what types of businesses are these employers involved? Do our majors use mathematics or statistics in their jobs? If so, how? Have they needed to learn other mathematics or statistics related skills? Were any courses they took particularly useful? If so, which ones and how were they useful? Are there any areas of mathematics or statistics that the majors or their employers wish had been addressed in the degree coursework? Has the major been indirectly useful, say in analytical or problem-solving skills? Are the majors actively maintaining or increasing their mathematics knowledge or skills? Are they involved in any mathematics or statistics activities outside of the workplace?

The Department will attempt to answer these questions and others which we will formulate by surveying as many of our past majors as we can find. We will enlist the help of the Alumni Association and OIR in finding past majors. If we discover companies or organizations which employ significant numbers of our majors, we will talk with these companies or organizations to discern whether they have suggestions for our majors. This should be helpful with our advising and recruitment efforts.

The Department plans to complete the Self-Study by the end of the Fall 2008 semester.