1. Common Time Exam Proposal:

The current common exam system does not provide adequate assessment information. Some perceived shortcomings are:

- inconsistency in level, number of questions, etc, from year to year
- inclusion of "compound" problems where results are hard to interpret
- linking of questions to goals unclear
- goals out of date, poorly formulated
- basic, central goals not distinguished
- "goals met" categories arbitrary and meaningless
- time limits not appropriate (varying opinions on whether students need more time to think or less)

The current system also does not result in the best overall final exam possible.

With exams fluctuating in emphasis and difficulty, the instructor usually does not know what to expect on the common exam portion; consequently the instructor is "flying blind" when making up a supplementary second part.

We propose for consideration a system where the first hour would be a common exam based upon very specific goals. The exam would be sufficiently similar in content from semester to semester that instructors would de facto know what is being tested even though they did not know the specifics of the problem (e.g the particular function being integrated by parts.) This knowledge would permit the writing of an appropriate second part.

The nature of the second part of the exam would be decided on a course-by-course basis by the course coordinator in consultation with appropriate faculty. In courses regularly taught by experienced faculty, the decision might be to let each faculty member write their own exam. Other options might include a second common part with possible free-response portions. The goal would be to compose the best overall final exam for each particular course.

2. Math 1205 Proposals:

Background:

In the current Math 1205 format, a student's weekly schedule consists of two class periods on campus and one 90 minute emporium class. The students register electronically for the Emporium section of their choice. The Emporium class includes 30 minutes in the lecture area, followed by time on the floor working through the assigned worksheet, typically in groups of three. The worksheets are closely connected to, but provide a different perspective of, the material covered in the lectures.

We are asking for your input on one of the following two proposals/options:

Proposal 1: Retain the current structure:

Some perceived advantages of this format include:

1. Students confront mathematics in a new way. In the Emporium the students are, necessarily, more actively involved in the process. Further, the worksheets require the students to explore a concept from a perspective different than that typically offered in the lecture class. They have a further opportunity to view the material differently if their Emporium teacher is not also their lecture teacher.

2. The Emporium provides an environment more conducive to personal student-teacher interaction than a lecture class.

3. The use of computer technology permits the student to solve problems that cannot be done by hand and is superior to calculators in color, word processing, and printability.

4. Using computer software levels the playing field for students in the course. All students must learn the new technology so one student does not have an advantage over another. This is especially true in the fall semester when a large number of the students have completed a calculus course in high school.

5. The current use of Matlab in 1205 supports the use of Matlab by Engineering Fundamentals.

6. The introduction of some technology in the Freshmen courses assists those teachers who wish to do so to incorporate technology into their teaching of Math 2224 and 2214.

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Proposal 2: Return to a 3 classroom sessions/week format:

Some perceived advantages of this format include:

1. Less overhead for the students. Having to go to the Emporium and learn a good amount of Matlab during their first semester would be eliminated.

2. More concentration upon fundamental points of mathematics would be possible.

3. Less work for teachers.

4. More time for classroom interaction with students would be possible.

5. The course would be more consistent with the system used in later courses. Hence the course would serve as a better preparation for these beginners.

3.   Use of Calculators in Math Classes:

We currently do not allow calculators for common-time finals, and most of our courses are taught as if calculators do not exist. We submit the following three possible courses of action for your consideration.

1) The math dept continues to forbid the use of calcululators in common-time finals. However course coordinators and teachers are encouraged to plan the courses with the realization that most of their students commonly use calculators.

2) The math dept changes the policy so that calculators may be used on all common exams.

3) The math dept adopts the policy that calculators may be used on all math tests.

4.   Skills Tests:

Analysis of the skills tests currently given in 1206 has shown a strong correlation between performance on the first test (testing 1205 skills) and performance in 1206. We propose that consideration be given to implementing similar skills tests at the beginning of 2224 & 2214. The purpose of these tests would be to provide feedback to students.

5.   A Two-Semester Proofs-based Linear Algebra sequence for math majors:

In order to add additional substance to our mathematics program and to increase emphasis on linear algebra for which there seems to be a general consensus that our students' grounding is weak, please consider the proposal which would:

-eliminate Math 3034 (Proofs) (methods, but little (no?) content)

-transform Math 3144 (Linear Algebra) so that the material is rigorously and carefully developed, emphasizing proofs, and methods of proof.

-add Math 3145 (Linear Algebra II) as a continuation course. Since much time will be spent on the methodology of proving results, less material than is in the current syllabus will be covered in 3144; to make up for this, and to additionally increase the depth of exposure to linear algebra for our math majors, this second course is needed. The courses would cover material through spectral/Jordan theorems.

We feel that linear algebra is a fundamental and essential building block to practically all later mathematical(+) studies and we must insure that it is firmly in place.

6.   Adopt Mathematica as our "Departmental" software:

Reintroduce the use of Mathematica as the technology component of our calculus program. Engineering may of course continue to feature MATLAB in their programs.

Argument in favor:

As a computational linear algebra desktop application, MATLAB is unsurpassed. However, Mathematica provides so much more, with much wider applicability in our students' later studies. The fact that there is much mathematics to be learned in just the use of Mathematica means that we can offer a much richer (pedagogically) experience to our students.

Argument against:

Introducing Mathematica at the freshman level would go against the agreement made with Engineering several years ago. It would require students to learn two software packages in freshman year. Students would either have to buy the additional software for their personal machines or go to the Emporium whenever they had to use it.