**Abstract**

Given that performance in Calculus I is highly correlated to graduation success for engineering students at UM, we have implemented an intervention strategy to increase the student success rate in that course.

**Methods**

- Collaborate with Mathematics Dept. to identify all engineering students who receive C- or below on first Calculus I (Math 115) exam
- Contact those students and create group advising sessions conducted by academic advisors, learning center director, and calculus course director
- Offer option of half-term intensive pre-calculus refresher course (Math 110) with the following advantages:
  - Students receive 2 credit hours
  - Current enrollment in Math 115 is expunged with no detriment to GPA
- Work with calculus course director to assign experienced and effective instructor to the pre-calculus refresher course

**Results**

**2004-05 Outcomes**

- Fall 2004 Math 115 Grade Distribution for CoE Students with C- or below on first Midterm who did not elect Math 110
  - Mean = 1.91, SD = 0.72
- Winter 2005 Math 115 Grade Distribution for CoE Students who elected Math 110
  - Mean = 2.48, SD = 0.88

**2005-06 Outcomes**

- Fall 2005 Math 115 Grade Distribution for CoE Students with C- or below on first Midterm who did not elect Math 110
  - Mean = 1.35, SD = 0.61
- Winter 2006 Math 115 Grade Distribution for CoE Students who elected Math 110
  - Mean = 2.72, SD = 0.83

**Discussion**

Our data indicate that of the group of students who received a C- or below on the first Math 115 exam, those who switched to Math 110 and retook Math 115 had a much higher success rate in Math 115 compared with those who stayed in the course.

**Conclusions**

The Math 110 course has proven to be a successful intervention strategy for a critical first-year gateway course in engineering that will hopefully positively impact graduation rates. Further work should be done to develop and test intervention strategies for other barriers to academic success.

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