



San Antonio College

Presentation to the
National Engineering Math Consortium
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SAC Background

(Fall, 2008 figures except where indicated)

- One of five community colleges in Alamo Colleges
- Student Population: 21, 763 (63% part time)
- Student Demographics: 59% female; 41% male
 - Ethnicity: Hispanic: 48% White: 42%
 Black: 5% Other: 5%
 - First generation in college: 50 %
 - 54% economically disadvantaged (2004-5)
 - 31% academically disadvantaged (2004-5)
 - 40% work full time
 - 32 % require remedial courses (fall, 2007)
 - 29 % require remedial math (fall, 2007)



Engineering Program

- Engineering Majors: 489
 - Engineering students often require remedial math
- SAC offers Associate of Science in Engineering (AS)
 - Requires 65 credit hours of college level courses
 - Requires math up through Calculus II
- SAC Transfer agreements with 4-year institutions
 - Examples: UTSA, St Mary's University, Texas A&M

Motivation to Join Phase 3

- Allow engineering students to enroll in select engineering and physics courses prior to completing required math sequence/prerequisite
- Increase interest/motivation of engineering students
- Increase retention in Engineering Program
- Improve performance in Math & Engineering Courses
- Increase AS-Engineering completion rate

Course Preparation

- WSU course materials used with some revisions
 - Revised Lab Manual to use Excel vs MATLAB for tables/graphs
 - Used UTSA typed course notes done in Excel
 - Procured “trig boards” from WSU machine shop
- Marketed course using flyers, website, student counselors, word-of-mouth, and instructors
- Course prep and teaching done by adjunct faculty member
 - Teaches engineering and remedial math
- Initial course offering in spring, 2009
 - One semester earlier than originally scheduled
 - ENGR 1377 – Introductory Math for Engineering Applications

Initial Course Offering - Results

- Initial enrollment of five (5) students
 - Short lead-time for course marketing
 - Unofficial, noncredit course
 - Not included in official SAC Course Catalog/Schedule
 - Course not part of AS-Engineering degree plan
 - Course not yet transferable to 4-yr colleges/universities
 - Not yet approved as substitute for math prerequisites in select engineering or physics courses
 - Some scheduling conflicts with other courses
 - Math prerequisite waived for initial course offering
 - 3 of 5 students were at remedial math level ranging from Basic Mathematics to Intermediate Algebra
 - All engineering majors – all male

Initial Course Offering - Results

- Three (3) students dropped
 - One - poor attendance and extremely weak math ability
 - One - time conflict with personal issues and weak math ability
 - One - time conflict with other (for credit) courses including College Algebra
- Two (2) students completed course
 - One - Grade of B
 - Also took remedial math (Intermediate Algebra - Grade: B)
 - Most enthusiastic and hardest working student
 - One - Grade of C
 - Had passed College Algebra in previous semester

Initial Course Offering - Results

- Student Feedback (2 students that completed course)
 - Overall course and instructor ratings were very high
 - Course was difficult, fast-paced, and time intensive
 - Recommended students in this course not take a full course load
 - Course materials were highly rated overall
 - Recommended more examples for homework & course notes
 - Homework sessions were very useful
 - Labs were useful - students enjoyed the “hands-on” work
 - Learned a lot - especially in math & engineering applications
 - Helped greatly in remedial math course one student was taking
 - Course will help students taking future math/engineering courses
 - Course was valuable & improved motivation to be engineers

Course Revisions Planned

- Add more examples to course notes and homework
- Add index to course notes
- Change lab manual, homework assignments, and tests to Word or Excel files
- Convert hand-drawn figures to graphics files in course notes and homework assignments
- Increase number of tests from 2 to 4 (2 sections/test)
- Simplify course schedule
 - Same time (12:30 – 3:00 pm) two days per week, 16 weeks
- Procure additional test equipment/supplies for labs
- Enforce math prerequisite (i.e., Intermediate Algebra)

Major Challenges & Solutions

- Low Enrollment Rate
 - Enforcing math prerequisite will reduce enrollment
 - Weak math abilities - continuing systemic problem
 - Course not a substitute for math prerequisite for select engineering and physics courses at SAC
 - Working initiative to get formal approval by Alamo Colleges
 - Course is noncredit
 - Course is not transferable to 4-yr institutions
 - Need two 4-yr institutions in Texas to accept SAC course for credit and transfer

Conclusions

- Limited experience in first year
- Student sample size is small so far
- Initial results encouraging
- Cooperation from 4-year institutions critical to SAC program succeeding
- Strong advocacy of program will continue
- Cautiously optimistic of ultimate success
- Appreciate assistance provided by WSU & UTSA

Key Personnel

- Mr. Jerry O'Connor
 - Chairman, Dept of Physics, Engineering & Architecture
- Dr. Dan Dimitriu, PhD, PE
 - Engineering Coordinator, San Antonio College
 - Project Leader
- Klaus Bartels
 - Course Developer and Instructor
- Rosa Maria Gonzalez
 - Engineering Program Counselor



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Questions?