ALAMO COLLEGES

SAN ANTONIO COLLEGE

Educating our community since 1925

2013 SAC CCLI Phase 3 5th Annual Report

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Activities and Findings

Background

- SAC engineering math course: ENGR 1377
  - *Introductory Math for Engineering Applications*
  - Free, not for credit course
  - Course Materials:
    - WSU course notes with UTSA enhancements
    - Klingbeil/Rattan Textbk, Rev. Prelim. Ed. (since Fall, 2012)
    - WSU Labs w/Univ. of Toledo Enhancements (Labs 2, 3, 4)
  - Taught by Klaus Bartels, adjunct faculty
    - One student teaching assistant/tutor since April, 2010
  - Initial course offering in spring, 2009 semester
    - Offered every fall and spring semester since

Activities and Findings

Enrollment and Course Completion Statistics

Calendar Year	Students Initially Enrolled	Students Completing Course	Students Completing Course (Grades)
2009	9	3	3 (B, C, F)
2010	6	1	1 (C)
2011	4	3	3 (A, B, C)
2012	23	0	-
Spring, 2013	2*	0	-
Totals:	44	7	7 (1-A, 2-B, 3-C, 1-F)

Notes: 4 males and 2 females passed the course
* Two high school teachers (one math, one science)

Activities and Findings

ENGR 1377 Completer Grades in Alamo Colleges Math Courses

Student #	ENGR 1377	Inter. Algebra	Plane Trig	College Algebra	PreCal	Cal I	Cal II
1	B	B					
2	C		B		D		
3	F					B	C
4	C						A
5	A					C	A
6	B					C	B
7	C					C	

Totals (excl. ENGR 1377): 2 A's; 4 B's; 4 C's; 1 D
Passing Grades: 10 of 11 (91%)

Activities and Findings – The "Good"

- Student feedback from course completers
  - Universally positive
  - Rated course very high overall
  - Students strongly agreed:
    - the course was enjoyable (but difficult for some)
    - the course helped their motivation & success in math and engineering classes
    - they learned a lot about engineering applications
    - course was valuable to them & met their expectations
    - they would recommend it to other engineering majors
- Textbook praised overall (all noncompleters)
  - More and better description of engineering examples needed

Activities and Findings – The "Bad"

- Chronic low enrollment & retention
  - Average enrollment: 5 students/semester
  - 18% (8/44) retention rate
  - Techniques used to improve enrollment:
    - Lowered math prerequisite from College Algebra/Trig to Intermediate Algebra
    - Increased marketing (flyers, website banner ads)
    - Spring, 2010: Opened to all five Alamo Colleges
    - Fall, 2011: Opened to STEM high school teachers
  - Enrollment improved, then dropped; retention down
    - Enrollment: 9 in 2009; 23 in 2012; 2 in spring, 2012
    - Retention: 3 in 2009; 0 in 2012; 0 in spring, 2013

Activities and Findings – The "Ugly"

- Reasons for low enrollment & retention
  - Not an approved, for credit course
  - Course not part of 2 or 4-yr engr. curriculum
  - Course not transferable to 4-yr university
  - Not approved as substitute for math prerequisites in physics or engineering courses
  - First course dropped by students when conflicts arise with credited courses
  - Low threshold for students to drop when personal conflicts arise

Activities and Findings – The "Lost Hope"

Conditions for success:

- ENGR 1377 would be a for credit SAC course
- ENGR 1377 would be transferable to Texas 4-year universities that are part of CCLI Phase 3
  - University of Texas at San Antonio (UTSA)
  - University of Texas at El Paso (UTEP)
  - Texas A&M-Kingsville (TAMUK).
  - SAC received transfer support letters for ENGR 1377 from TAMUK and UTEP in June, 2010 but not as a course leading to a degree.

Activities and Findings – The "Lost Hope – cont'd"

- SAC Curriculum Committee did not approve the course for credit
  - Reason: Equivalent course at 4-year institutions is not included as a required course in engineering curriculums
  - SAC requested course be approved/credited as a unique needs course by Academic Council.
  - Request tabled by Curriculum Committee in 2011
    - Lack of sufficient info. proving benefits to students.
- Incorporate elements in Intro to Engineering course (ENGR 1201)
  - Problem: Approx. 41% of engineering freshmen in remedial math & little room in course for adding topics

Activities and Findings – "New & Improved Hope"

- Use 2 EM labs in 6-week summer EDGE program
  - For high school students interested in engineering
- Create Engr Math Continuing Education Course
  - *Introductory Math for Science & Engineering Applications*
  - Targeted at High School Math and Science teachers
    - College students could attend as well (paid by CCLI?)
  - Recommended by Ed. Svc. Center, R20, Math Specialist
  - Primary benefits:
    - Improve teacher's understanding of how to apply scientific principles and mathematical concepts/methods to analyze/solve practical application problems in science and engineering, which they can then pass on to students in the classroom
    - Improve math skills and motivation for and support of engineering

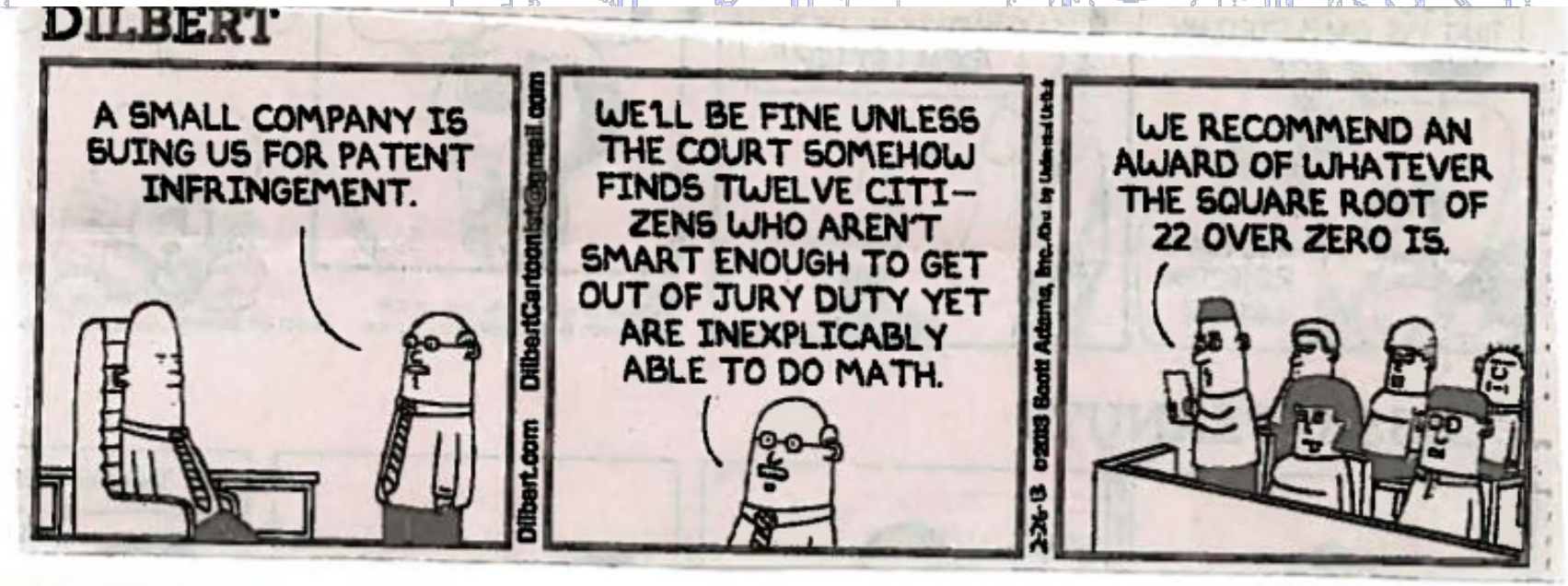
Activities and Findings – "New & Improved Hope"

- Strong support from SAC Continuing Ed Dean
- Reduce class time to 3 hours, one evening/wk, for 16 weeks (vs current 2.5 hrs, twice a week)
- Scope & depth of material reduced
  - Eliminate differential equations topics
  - Reduce number of examples covered
  - Perform 5 – 6 labs vs. 8
  - Less testing
  - Minimize lecture time
  - Focus on problem solving and labs
- Initial course planned for Fall, 2013!

Conclusions

- ENGR 1377 crediting and transferability to 4-yr institutions appears hopeless
  - Results: Low enrollment & retention
- New Hope: New Continuing Ed. course, **Fall, 2013**
- SAC still a strong advocate of CCLI effort
  - Will continue offering EM course in 5th year
  - Will continue to use Klingbeil/Rattan textbook
    - Looking forward to 1st Ed. (reviewed by Bartels)
  - Will continue to use some labs in EDGE program
- WSU support & CCLI funding extensions – Great!

To be continued…



Let's keep fighting!