

Trinity Valley Community College
General Education Outcomes Report
by General Education Goal, Program, and Fiscal Year

General Education Outcome: Mathematics

FY06 (Mathematics)

Outcome 3

Desired Outcome:

College Algebra and Mathematics for Business & Economics I students will demonstrate their ability to successfully read and interpret word problems into linear, quadratic or higher degree equations or systems of equations and to use these equations to solve problems.

Implementation Strategy:

Lectures, class discussions, and homework assignments will be used to teach students to successfully read and interpret word problems into equations and to use these equations to solve problems.

Assessment Method:

All College Algebra and Mathematics for Business & Economics I instructors will include on Final Exams for these courses a question (or questions) asking students to solve a word problem by writing an equation and solving it. Each instructor will record each student's percent correct on the section of their Final Exam covering reading and writing equations for solving word problems. Students will be deemed to have improved sufficiently at this skill if they earn 70% of the points allotted to this skill on their Final Exam.

Criteria:

70% of a sampling of College Algebra and Mathematics for Business & Economics I students chosen from each TVCC campus which offers these courses will demonstrate sufficient improvement at reading word problems and interpreting them into solvable equations by earning at least 70% of the points allotted to this topic on their Final Exam.

Relationship to General Education Goals:

This outcome relates to the mathematics and the critical thinking TVCC general education outcomes, and it also relates to TVCC's QEP "Reading for Comprehension."

Data and Analysis:

Fall 2005

341 students from 22 sections of college algebra or business mathematics I were tested. 61.9% were successful at the 70% level required by our above criteria (see attached worksheet). We did not meet our goal of 70% successful. This was a very comprehensive evaluation with instructors participating from three campuses and sections evaluated from day, night, prison, and concurrent classes.

Spring 2006

298 students were tested from 21 sections of College Algebra or Business Math I. Sections from all three main campuses which teach College Algebra and sections from 2 prison units were represented. One instructor seems to have misunderstood the instructions, skewing the results.

Changes Made as a Result of Plan:

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Fall 2005

We do plan to re-evaluate this topic in Spring 2006 to add more data.

Some changes that could result from this evaluation would include more emphasis on communicating with students, increased student peer mentoring, and encouraging individualized student involvement.

Spring 2006

Since this topic involves our TVCC learning initiative, we plan to include it in next year's analysis. Students do not seem to retain the ability to apply algebraic tools to written problems. So, changes in the frequency these types of problems are included might be appropriate. Continuous emphasis on applying new algebraic tools could help. There will be many different approaches to this because there are many different instructors. Some changes that could result from this evaluation would include more emphasis on communicating with students, increased student peer mentoring, and encouraging individualized student involvement.

Plan Status: Administrative Review of Results

Program Type: Academic Programs

Program User: Nancy Long

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Outcome 1

Desired Outcome:

College Algebra students will demonstrate their ability to solve third degree (and higher degree) equations using the Rational Zeros Theorem and synthetic division.

Implementation Strategy:

Lectures, class discussions, and homework assignments will be used to teach students and let them practice using the Rational Zeros Theorem and synthetic division.

Assessment Method:

All College Algebra instructors will include on their College Algebra Final Exam a question (or questions) asking students to solve equation(s) using the Rational Zeros Theorem and synthetic division. Each College Algebra instructor will record each student's percent correct on the Rational Zeros Theorem and synthetic division section of their Final Exam and report results to the Division Chairperson for Mathematics and Science. Students will be deemed to have mastered this topic if they earn 70% of the points allotted for this topic on a Final Exam.

Criteria:

70% of a sampling of College Algebra students chosen from each TVCC campus which offers College Algebra will demonstrate mastery of the Rational Zeros Theorem and synthetic division by scoring 70% or higher on that section of their College Algebra Final Exam.

Relationship to General Education Goals:

This outcome relates to the mathematics TVCC General Education Outcome because it demonstrates mastery of a mathematics skill that is always included in College Algebra courses. Also, since this is a multi-step problem it relates to gauging student's critical thinking ability.

Data and Analysis:

Fall 2005

288 students from 18 college algebra sections (including some from each of the three main campuses and from each of three prison units) were evaluated. 66.3% of students tested were successful at the 70% or higher level required by above criteria (see the attached worksheet). Our goal was 70%. Therefore, we did not meet the goal. This was a comprehensive evaluation and instructor response was excellent.

Spring 2006

298 students were tested from 17 sections chosen from all three main campuses and from two prison units. Only 55.0% of students tested met the 70% criteria for success. We were not successful in meeting our goal. We were successful in involving nearly all instructors in the evaluation of their students' success.

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Fall 2005

One instructor, who routinely exempts many students from the final exam, will use a different test to evaluate students. We plan to re-evaluate this same topic in Spring 2006. Teaching methods vary widely among this large group of instructors and campuses, and it would be difficult to list all the teaching initiatives which will be applied to this problem. Some methods include emphasis on communication with students, increased student peer mentoring, and encouraging individualized student involvement.

Spring 2006

This topic still needs to be retested next year. One instructor with four large sections may have misinterpreted the instructions for evaluating students' success. All mathematics instructors will be encouraged to participate and correctly interpret the instructions. The instructions may need to be made clearer. Many different instructional methods will be employed to improve students' success rate. Some methods include emphasis on communication between students, increased student peer mentoring, and encouraging individualized student involvement.

Plan Status: Administrative Review of Results

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Outcome 2

Desired Outcome:

Calculus I students will demonstrate their ability to differentiate and integrate elementary functions using formulas.

Implementation Strategy:

Lectures, class discussions, and homework assignments will be used to teach students and let them practice differentiation and integration formulas and skills.

Assessment Method:

All Calculus I instructors will include on their Calculus I Final Exam questions asking students to differentiate and integrate elementary functions by using basic formulas. Each Calculus I instructor will record each student's percent correct on the differentiation and integration section of their Final Exam. Students will be deemed to have mastered these topics if they earn 70% of the points for this topic on their Final Exam.

Criteria:

70% of a sampling of Calculus I students chosen from each TVCC campus which offers Calculus I will demonstrate mastery of "elementary functions differentiation and integration by basic formulas" by scoring 70% or higher on that section of their Calculus I Final Exam.

Relationship to General Education Goals:

This outcome relates to the mathematics general education outcome by placing emphasis on important basic skills, and since some problems are multi-step problems with substitutions, it relates to gauging students' critical thinking ability.

Data and Analysis:

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Fall 2005

Calculus I instructors all interpreted the evaluation instructions as asking them to evaluate their students ability to find derivatives in one evaluation and their students ability to find integrals as a separate evaluation. Therefore, two sets of results are reported here. 34 students from 4 calculus I classes (beginning with 47 students) from two campuses and from a high school concurrent class were evaluated (see attached worksheet). Two calculus I sections with 28 students were unreported.

79.4% of the 34 students were successful in finding derivatives at the above criteria required 70% level. We exceeded our goal of 70% successful. We do plan to repeat the evaluation and derive more data this year in Spring 2006.

67.7% of the 34 students were successful in finding integrals at the above criteria required 70% level. We did not meet our goal of 70% successful. We do plan to repeat the evaluation and derive more data this year in Spring 2006.

Spring 2006

While most mathematics courses are taught both Fall and Spring semesters, making a second analysis in Spring 2006 appropriate, this is not true for Calculus I. Only two Calculus I sections were taught in Spring 2006. However, this did allow us to include data from a concurrent high-school class taught by an Athens campus instructor whose main contact with the students was internet questions and discussion and face-to-face testing. 100% of the students were successful at the 70% or higher level indicated above.

Changes Made as a Result of Plan:

Fall 2005

Calculus I classes are smaller than usual this year. TVCC's upcoming change to four semester hour calculus classes may increase enrollment and necessitate a repeat of the evaluation of this topic for 2006-2007. One part-time instructor and one high school concurrent instructor failed to evaluate calculus I students on this topic. One change will be to ensure that all calculus I instructors receive timely instructions for completing the evaluation. Clearer instructions for using one combined evaluation must also be given.

Instructional methods vary, but some proposed methods to improve student comprehension include: increased emphasis on communication with students, increased student peer tutoring, and encouraging individualized student involvement.

Spring 2006

While the students were successful, they felt unduly stressed by the internet connection and the demanding nature of the course. The high school has decided not to offer Calculus I next year as a concurrent class. They also cited the fact that TVCC is changing to four hour calculus classes – making the course cover even more material – as a reason for discontinuing their concurrent offering. We do plan to offer a four hour Calculus I course at one of the TDCJ prison units we serve next Fall Semester, but the course will be taught using direct classroom contact.

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