Course description

MATH 2413 CALCULUS I (4-4-0). A standard first course in calculus. Topics include inequalities; functions; limits; continuity; the derivative; differentiation of elementary functions; Newton's method; applications of the derivative; the integral; integration of algebraic functions and the sine and cosine functions; numerical integration; and basic applications of the integral.

Course objectives are attached, and can also be viewed on the internet, at:
http://www2.austin.cc.tx.us/mthdept2/tfcourses/obj2413.htm

Required materials

  (The single-variable version has the material for Calculus I and II. If you will take Calculus III, use the full version.)
- Supplemental Material for Students: Student Solution Manual
- Technology required: You must have access to technology that enables you to (1) Graph a function. (2) Find the zeroes of a function. Most ACC faculty are familiar with the TI family of graphing calculators. Hence, TI calculators are highly recommended for student use. Other calculator brands can also be used. Your instructor will determine the extent of calculator use in your class section.

Prerequisites:

Please make sure you have the necessary prerequisites for this course. That means you need a C or better in MATH 2412 or the equivalent. Another option is an appropriate secondary school course (one year of precalculus or the equivalent, including trigonometry, with a B or better) and a satisfactory entrance score on the ACC Mathematics Assessment Test. If I feel you are not prepared for this course, I may choose to withdraw you. If you have any questions about your preparation for the course, please come and talk to me about it.

Course Rationale

This course is the first course in the traditional calculus sequence for mathematics, science and engineering students. It is part of what could be a four-semester sequence in calculus courses. The approach allows the use of technology and the rule of four (topics are presented geometrically, numerically, algebraically, and verbally) to focus on conceptual understanding. At the same time, it retains the strength of the traditional calculus by exposing the students to the rigor of proofs and the full variety of traditional topics: limits, continuity, derivative, applications of the derivative, and an introduction to the definite integral.
Grading:
There will be 4 exams and a comprehensive final during the term, each of which will count equally towards your grade.

<table>
<thead>
<tr>
<th>Test 1, 2, 3, and 4</th>
<th>100 points each (400 points)</th>
</tr>
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<tbody>
<tr>
<td>Final exam</td>
<td>100 points</td>
</tr>
<tr>
<td>Homework</td>
<td>100 points</td>
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<tr>
<td>Total possible</td>
<td>600 points</td>
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</tbody>
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Grades will be assigned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>90% or higher</td>
</tr>
<tr>
<td>B</td>
<td>80% to 90%</td>
</tr>
<tr>
<td>C</td>
<td>70% to 80%</td>
</tr>
<tr>
<td>D</td>
<td>60% to 70%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn by student or instructor prior to April 23</td>
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Tests
The final exam score will replace the lowest test score if the final exam score is higher.

All tests will be given in class except for the mid-term exam, which will be given in the testing center (see test schedule on page 6). If an official, documented emergency prevents a student from taking an in-class test, a make-up test may be arranged. I must be notified no later than the day and hour of the missed test if a make-up test is to be given. You have a week in which to take the mid-term exam and there will be no make-ups under any circumstances. A missed test that does not qualify for a make-up will receive a score of 0, and thus will be replaced by the final exam score.

Homework and quizzes:

Homework assignments will be collected approximately once each week in class, according to the Homework Schedule. Assignments can be turned in during class or before class in the faculty mailroom, on or before the due date. It is your responsibility to make sure I have received it.

Homework is graded strictly according to completeness and accuracy. No late assignments will be accepted, regardless of the reason and of whether you attend class. The lowest 5 homework scores will be dropped to calculate your grade.

Attendance and withdrawal policy:

It is important to attend class regularly. I may drop you for excessive absences. Keep in mind that it is always the student’s responsibility to drop a course. Never assume any ACC instructor has dropped you from a course until you have checked with administration. The deadline for withdrawal is April 23. After that date no withdrawals may be initiated by the student or by the instructor.

Calculus I lab
The lab MATH 0187 (1-0-2) is designed for students currently registered in Calculus I, MATH 2413. It offers individualized and group setting to provide additional practice and explanation. This course is not for college-level credit. Repeatable up to two credit hours. This spring the following section is offered:

| Synonym: 47552 | Section: 002 | RGC 219 | MW 11:00 – 11:50 |
Instructional Methodology

This course is taught in the classroom primarily as a lecture/discussion course.

How to succeed in Calculus I:

*Always show your work.*

Here’s the process I follow for each problem when I’m grading an exam.

- Full credit is given for a problem with thorough, logical steps and a correct answer in the correct form.
- Partial credit may be given for demonstration of relevant knowledge. Work through the problem as well as you can. Explain what you think went wrong. Make it as clear as possible what approach you took.
- *Whether the answer is correct or incorrect*, if insufficient work is provided or if the work does not demonstrate knowledge of the problem, *no credit* is given for the entire problem.

*Don’t fall behind in class!*

Calculus I is a challenging course. If material in class is unclear, or if you have difficulty with the homework, do one or more of the following immediately and persist until you can work out problems with comfort.

- Ask questions in class when you don’t understand something
- See me in office hours to go over the material one-on-one.
- Get free first-come-first-serve tutoring in the Learning Lab. For hours and information for learning labs at all campuses, visit their website, at [http://www.austincc.edu/tutor/](http://www.austincc.edu/tutor/)
- Read through the textbook again and work on problems from that section. Start with the simplest and work your way up.

Learning Objectives

The objectives of Calculus I are for the students to understand the following topics and to be able to apply these concepts to solve application problems. Calculus I covers the following topics.

1. Find limits of functions (graphically, numerically and algebraically)
2. Analyze and apply the notions of continuity and differentiability to algebraic and transcendental functions.
3. Determine derivatives by a variety of techniques including explicit differentiation, implicit differentiation, and logarithmic differentiation. Use these derivative to study the characteristics of curves. Determine derivatives using implicit differentiation and use to study characteristics of a curve.
5. Use basic techniques of integration to find particular or general antiderivatives.
6. Demonstrate the connection between area and the definite integral.
7. Apply the Fundamental theorem of calculus to evaluate definite integrals.
8. Use differentiation and integration to solve real world problems such as rate of change, optimization, and area problems.

Additional services at ACC.

**TESTING CENTER POLICY**
ACC Testing Center policies can be found at: [http://www.austincc.edu/testctr/](http://www.austincc.edu/testctr/)

**STUDENT SERVICES**
The web address for student services is: [http://www3.austincc.edu/evpcss/rss/Default.htm](http://www3.austincc.edu/evpcss/rss/Default.htm). The ACC student handbook can be found at: [http://www3.austincc.edu/evpcss/handbk/toc.htm](http://www3.austincc.edu/evpcss/handbk/toc.htm).
INSTRUCTIONAL SERVICES
The web address is:  http://www3.austincc.edu/evpcss/memos/reference.htm
then click on “Campus Based Student Support Overview”.

Some more policies

Incomplete Grade Policy
Incomplete grades (I) will be given only in very rare circumstances. Generally, to receive a grade of "I", a student must have taken all examinations, be passing, and after the last date to withdraw, have a personal tragedy occur which prevents course completion.

Statement on Scholastic Dishonesty
Acts prohibited by the college for which discipline may be administered include scholastic dishonesty, including but not limited to, cheating on an exam or quiz, plagiarizing, and unauthorized collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, work, research or self-expression. Academic work is defined as, but not limited to, tests, quizzes, whether taken electronically or on paper; projects, either individual or group; classroom presentations; and homework.

Statement on Scholastic Dishonesty Penalty
Students who violate the rules concerning scholastic dishonesty will be assessed an academic penalty which the instructor determines is in keeping with the seriousness of the offense. This academic penalty may range from a grade penalty on the particular assignment to an overall grade penalty in the course, including possibly an F in the course. ACC’s policy can be found in the Student Handbook page 33 or on the web at:  http://www.austincc.edu/marketing/handbook/student_handbook_02-03.pdf.

Statement on Student Discipline
Classroom behavior should support and enhance learning. Behavior that disrupts the learning process will be dealt with appropriately, which may include having the student leave class for the rest of that day. In serious cases, disruptive behavior may lead to a student being withdrawn from the class. ACC’s policy on student discipline can be found in the Student Handbook page 32 or on the web at:  http://www.austincc.edu/marketing/handbook/student_handbook_02-03.pdf.

Statement on Students with Disabilities
Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office of Students with Disabilities on the campus where they expect to take the majority of their classes. Students are encouraged to do this three weeks before the start of the semester.

Statement on Academic Freedom
Institutions of higher education are conducted for the common good. The common good depends upon a search for truth and upon free expression. In this course the professor and students shall strive to protect free inquiry and the open exchange of facts, ideas, and opinions. Students are free to take exception to views offered in this course and to reserve judgment about debatable issues. Grades will not be affected by personal views. With this freedom comes the responsibility of civility and a respect for a diversity of ideas and opinions. This means that students must take turns speaking, listen to others speak without interruption, and refrain from name-calling or other personal attacks.