Cedar Crest College
Calculus II – MAT 142 (3 credits)
Fall, 2009

Instructor: R. Reynolds
Office Hours: Monday, Wednesday: 7:00 - 7:45 AM; 9 -11 AM; 2 – 5:15 PM
                     Tuesday: 11 - noon
                     Friday: 7:00 - 7:45 AM; 9 – 11 AM
                     (or by appointment)
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"E to the u, du-dx, e to the x, dx;
cosine, secant, tangent, sine,
3.14159
integral, radical, u dv;
slipstick, slide rule, MIT."

(football cheer at MIT)

Course Goals:

Hopefully, throughout the semester, each student will experience some (if not all) of the enthusiasm for the study of calculus expressed in this cheer used at the Massachusetts Institute of Technology. As the student already has discovered, studying calculus has many rewards including extensive applications to the student's chosen discipline and providing an incredible intellectual challenge. Learning calculus takes time – it does not come all at once. It takes much patience and persistence – and hard work. Be prepared to spend considerable time outside of class working on your calculus. In addition, there is so much to the study of calculus that a student cannot expect to learn everything she needs in class. *A LOT* of time and energy needs to be spent in reading the text, reviewing the notes, and working the homework problems.

In addition, we will

- Extend and expand work done in Calculus I (differential calculus) to examine functions such as the exponential, logarithmic, and inverse trigonometric functions.
- Study in depth the other broad branch of introductory calculus – integral calculus – and its applications.

Course Outcomes:

Upon successful completion of the course, a student should be able to:
- Understand and evaluate the definite integral using the Fundamental Theorem of Calculus

- Demonstrate the application of integration in various contexts including application problems involving area, distance, volume, work, and arc length.
- Show an understanding of exponential, logarithmic, and inverse trigonometric functions, and their applications, and be able to compute their derivatives.
- Evaluate various integration methods including substitution, integration by parts, and integration using partial fractions.

Instruction Methods:

The primary method of instruction will be lecture/discussions supported heavily by homework assignments. Daily homework will be assigned, and students are expected to have completed these assignments, as they will be the basis of our problem solving sessions. Students will be expected to contribute in these sessions, and be able to present their solutions to their peers. Because the material in this course is cumulative in nature, students are ***strongly*** advised to avoid falling behind in these studies. The student should consult the instructor with any questions/difficulties encountered in her/his studies; a student may be referred to the Advising Center for additional assistance. *Students with documented disabilities who may need academic accommodations should discuss these needs with the instructor during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.*

Attendance:

Attendance will be taken at each class meeting. Students are strongly urged to attend class except in extenuating circumstances and are responsible for all material presented including lectures, announcements of tests and quizzes, and homework assignments. Excessive absence **guarantees** an adverse impact on your course grade. When present in class, students are expected to be **fully** engaged in the class. A student is expected to pay attention, listen carefully, think critically about the material being discussed, and participate; please do not do homework, study for other classes, sleep, etc., while in our class. If the instructor notices such behavior, she will mark the offending student absent. Makeup exams will be administered only if the student notifies the instructor **before** the exam with a valid medical or personal excuse. Late homework will generally be accepted but can earn a maximum grade of C; late homework will **not** be accepted if solutions have already been provided in class. Makeup quizzes will not be administered except under extraordinary circumstances.

Calculator:

A TI (83 or above) graphing calculator is required. It should be brought to each class along with the textbook.

Evaluation:

Three hourly tests and a cumulative final exam will be given. Homework will be collected and graded regularly. Class participation and individual effort will also enter into the computation of the student's grade. Each student is expected to do her/his own work; do not invite trouble by working directly with someone else or by using materials not authorized by the instructor. Violations of the Cedar Crest College plagiarism policy and/or honor code will be handled by the instructor, will be reported to the Dean, and will

result in a grade of zero on the assignment/exam. Your obligations for this course include attendance at the final exam, on the day and time scheduled by the Registrar's Office. You should not make travel arrangements until the final exam schedule is published; if you must make plans early, you should schedule your travel after the last final exam day. Students are also reminded that theft or damage of library, computing, and other academic resources is not only a violation of the honor code but also prohibited by the laws of the Commonwealth of Pennsylvania.

Grades will be based on a relative scale with the following tentative weights:

Hour exams	45% (15% each)
Quizzes/homework	25%
Final exam	20%
Instructor Evaluation	+ 10% (includes attendance and class
100%	participation)

Required Text:
Calculus, Sixth Edition, Stewart, James, Brooks/Cole Publishing, 2008.

Tentative Course Outline

Date	material to be covered in class
8/24	introduction
8/25	summation notation – Appendix E
8/26	problems
8/28	5.1 – areas under curves
8/31	5.1
9/1	problems
9/2	5.2 – the definite integral
9/4	problems
9/8	5.3 – Fundamental Theorem of Calculus
9/9	5.3
9/11	problems
9/14	5.4 – indefinite integrals
9/15	problems
9/16	review
9/18	Test #1 – 5.1 – 5.4, appendix E
9/21	5.5 – integration by substitution (change of variable)
9/22	5.5
9/23	problems
9/25	6.1 – applications of the definite integral
9/28	6.1 – area between curves
9/29	problems
9/30	6.2 – volumes – methods of disks
10/2	6.2 – volumes – methods of washers
10/5	problems
10/6	6.4, 6.5 – work, average value
10/7	problems
10/9	Test #2 – 5.5, chapter 6
10/14	7.1 – inverse functions
10/16	7.1
10/19	problems
10/20	7.2 – exponential functions and their derivatives
10/21	7.2 – natural exponential functions
10/26	problems
10/27	7.3 – logarithmic functions
10/28	problems
10/30	7.4 – derivatives of logarithmic functions
11/2	7.5 – exponential growth and decay
11/3	7.6 – inverse trigonometric functions
11/4	7.8 – indeterminate forms
11/6	problems
11/9	Test #3 – chapter 7
11/10	8.1 – integration by parts
11/11	8.1
11/13	problems
11/16	8.2 – trigonometric integrals
11/17	problems
11/18	8.3 – trigonometric substitution methods
11/20	problems
11/23	8.4 – integration using partial fractions
11/24	problems
11/30	8.8 – improper integrals
12/1	problems
12/2	9.1 – arc length
12/4	problems
12/7	review
12/8	review