

# Math 142 Calculus II Sample Syllabus

Spring 2012

### Instructor:

Office:

Phone:

Email:

Webpage:

Office Hours:

**Course Description:** Standard second-semester course in single variable, integral calculus with applications, especially for students of science, engineering, mathematics, and computer science. Prereq: satisfactory placement score, or Math 141 (or AP or transfer credit for 141) or 147. **(QR)** 4 credit hours.

**Text:** *Calculus – Early Transcendentals (ET)*, 2<sup>nd</sup> edition, by Rogawski, W.H. Freeman Publishing Company. **Textbook website:** <http://www.whfreeman.com/catalog/static/whf/customstore/UTK/Collins/>

**Calculator:** A graphing calculator is required for this course. The Math Department highly recommends and provides support for the TI-83+ and TI-84+ models. Use of cell phones and calculators with advanced alpha-numeric capabilities, such as the TI-89, is forbidden in this course.

**Grades:** Grades will be determined using the grading scale below. Your letter grade is a measure of your mastery of course material and your fulfillment of course objectives. Letter grades are not assigned on the basis of a curve or the class average.

4 Exams	60%
Homework Quizzes	15%
<u>Final Exam</u>	<u>25%</u>
Total possible	100%

letter	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
points	90-100	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	57-59	0-56

### Attendance & Make-up Policy:

**Disability Services:** If you need course adaptations or accommodations because of a documented disability or if you have emergency information to share, please contact the Office of Disability Services at 2227 Dunford Hall at 974-6087.

**Assumed Prerequisite Knowledge:** It is assumed that you have had sufficient differential calculus preparation before enrolling in this course. In particular, you should know your trig identities and exact values and derivatives, limits and L'Hopital's Rule, and should be familiar with polar curves.

Important Dates:	Exam Dates (tentative):
Add/drop without W deadline	
Drop with W deadline	
Comprehensive Final (required to pass)	

**Classroom Etiquette:** Please be considerate of the instructor and those around you. Your behavior in class displays your attitude and respect for your teacher and the class. Come to class on time and stay the entire period or ask to be excused if you need to leave early or arrive late. **Turn off and put away all cell phones (no texting)**, laptops and ipods during class. Do not talk to classmates at inappropriate times. Refrain from reading newspapers or working on other coursework during class.

**Academic Standards of Conduct:**

All students are expected to abide by the University **Honor Statement**. In mathematics classes, violations of the honor statement include copying another person's work on any graded assignment or test, collaborating on a graded assignment without the instructor's approval, using unauthorized "cheat sheets" or technical devices such as calculators, cell phones or computers for graded tests or assignments, or other infractions listed in "*Hilltopics*". These violations are serious offenses, subject to disciplinary action that may include failure in a course and/or dismissal from the University. The instructor has full authority to suspend a student from his/her class, to assign an "F" in an exercise or examination, or to assign an "F" in the course. See "*Hilltopics*" for more complete information. A report of all offenses will be sent to appropriate deans and the Office of Student Judicial Affairs for possible further action.

**The Honor Statement**

*An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.*

**Math Tutorial Center:** The Math Tutorial Center is in Ayres Hall G012 (basement, east end). It provides **free tutoring**. Hours of operation are posted at <http://www.math.utk.edu/MTC/>.

Lectures per topic	Section	Topic
2	4.9	Antiderivatives: 1 – 45 odd; 47 - 77 odd, 83
2	5.1	Approximating and Computing Area: 1 - 13 odd, 18, 19, 20; 21, 23, 27, 30, 33, 37, 41, 43, 45, 53, 54, 57, 61, 62, 65, 66, 71, 75, 77
1	5.2	The Definite Integral 1 - 21 odd, 22, 23 - 37 odd, 43, 44, 45, 46, 55 - 62 all, 67, 71, 73, 83
1	5.3	Fundamental Theorem of Calculus, Part I: 1 – 43 odd, 49
1	5.4	Fundamental Theorem of Calculus, Part II 1 - 15 odd, 21 - 25 odd, 29 - 35 odd, 45
1	5.5	Net Change as the Integral of a Rate: 1 - 15 odd, 18, 25, 27
2	5.6	Substitution Method: 7 - 43 odd, 49, 52, 57, 65, 69, 70; 51, 53, 71, 77, 78, 79 - 89 odd, 95
1	5.7	Further Transcendental Functions 1 - 27 odd, 33 - 35 all, 38 - 41 all, 43 - 48 all, 50, 53, 55, 58, 59, 63, 69
1		Review
1		Exam 1
2	6.1	Area Between Two Curves: 1 - 13 odd, 17 – 25 odd; 27 - 43 odd, 47, 51, 55
2	6.2	Setting Up Integrals: Volume, Density, Average Value 1, 2, 5, 9, 11, 13, 24 – 27; 29, 31 - 33, 35, 36, 39 - 45 odd, 49 - 52, 56
1	6.3	Volumes of Revolution: 1 - 23 odd, 27 - 35 odd, 39, 45
1	6.4	The Method of Cylindrical Shells: 1 - 9 odd, 39, 41, 43, 47, 48

2	6.5	Work and Energy: 1 - 7 all, 27, 29, 32; 11, 13, 17 - 20
2	7.1	Integration by Parts: 1 - 6 all, 7 - 25 odd, 22, 37, 45; 43, 48, 49 - 55 all, 57 - 71 odd, 75
1	7.2	Trigonometric Integrals: 1 - 9 odd, 15, 17, 23, 27, 33, 37, 41, 43, 47 - 55 odd, 63
1	7.3	Trigonometric Substitution: 1, 4, 6, 7, 9, 15 - 21 odd, 45 - 48, 50
1	7.4	Integrals Involving Hyperbolic and Inverse Hyperbolic Functions 1 - 11 odd
1		Review
1		Exam 2
2	7.5	The Method of Partial Fractions: 5, 7 - 11 all, 29, 35; 1, 4, 13, 30, 31, 33, 34, 37, 39, 54, 56, 59
2	7.6	Improper Integrals: 3, 5, 7, 13, 15, 19, 21, 25, 27, 33, 45, 47, 53; 1, 9, 11, 17, 23, 31, 37, 39, 49, 55, 59, 61, 63
1	7.8	Numerical Integration: 4, 7, 10, 11, 15, 16, 17, 19, 25, 27, 29
1	11.4	Area and Arc Length in Polar Coordinates: 1 - 15 odd
1	8.1	Arc Length and Surface Area: 1 - 15 odd, 10
1	8.2	Fluid Pressure and Force: 1, 3, 5, 8, 9, 11
1	8.3	Center of Mass: 1, 5, 7, 10, 13, 15, 17, 21, 23, 31
1	8.4	Taylor Polynomials: 1, 3, 7, 11 - 21 odd, 25, 27, 55
1		Review
1		Exam 3
1	10.1	Sequences: 1 - 29 odd, 35, 37, 39, 43, 53, 49 - 55 odd
1-2	10.2	Summing an Infinite Series: 2, 3, 5, 7, 11 - 37 odd
2	10.3	Convergence of Series with Positive Terms: 1 - 13 odd; 15 - 29 odd, 37 - 57 odd, 67, 69, 77
1	10.4	Absolute and Conditional Convergence: 1 - 11 odd, 12, 13, 17 - 26 all, 30
1	10.5	The Ratio and Root Tests: 1, 5, 7, 9, 13, 17, 37 - 39 all, 43 - 49 all, 52, 55
1-2	10.6	Power Series: 1 - 35 odd, 39
2	10.7	Taylor Series: 3 - 15 odd; 1, 29 - 36 all, 45 - 51 all, 53, 54, 55, 57, 63, 68
1		Review
1		Exam 4
2-3	Wrap-up	

### **Instructor notes:**

Schedule: There are usually 42 MWF meetings, 14 T meetings, and 15 R meetings. Depending on your schedule you'll have 47-49 instruction days, 3 or 4 exam days, and 4-5 review/extra days.

In terms of homework and/or quizzes, you should assign a collection of problems from each section that give the students opportunity to practice the basic skills on algebraic, trigonometric, and exp/log functions. You should also include some applications and a few more advanced problems. Note that each section has Preliminary Questions which are a good check of a student's conceptual understanding.

You can choose how to distribute your points/percentages with typically 10-20% for HW/Quizzes and 20-30% for the final.

You can also choose your own grading scale. If you have no particular preference, you can use the same schedule that we use for the other 100-level courses:

A = 90+, A- = 87-89, B+ = 83-86, B = 80-82, B- = 77-79, C+ = 73-76, C = 70-72, C- = 67-69, D+ = 63-66, D = 60-62, D- = 57-59, F = 56-

Cover 4.9, 5.1-5.7, 6.1-6.5, 7.1-7.6, 7.8, 8.1-8.4, 10.1-10.7 and 11.4 (with Chapter 7)

For 4 exams, Exam 1 will be through Chapter 5, Exam 2 on Chapter 6 and first part of Chapter 7, Exam 3 on rest of Chapter 7 and parts of Chapter 8, and Exam 4 on the rest of Chapter 8 and as much of Chapter 10 as you can. (This assumes you follow the book as it is written; see below for some optional ordering)

In terms of pacing for the course, you'll need at least one day per section, with sections 4.9, 5.2, 5.6, 6.1, 6.2, 6.5, 7.5, 7.6, 10.2, 10.3, 10.7 each needing 2 class periods. This leaves 4-5 additional extra days to spend more time on sections as needed.

If you've not taught 142 before, it much more quickly paced than 141, especially if you plan on spending appropriate time on Taylor Series (and you should). You don't need to do all the details of all the methods of integration; we do want some partial fractions and some trigonometric substitutions, but not necessarily every variation. Make sure you cover the various applications of integration, emphasizing the process of breaking a situation down into parts, applying a basic rule to each part, summing up the parts, and then recognizing the result (in the limit) as an integral.

Students, especially those who have had some calculus before, will be fine during the first  $\frac{1}{2}$  to  $\frac{2}{3}$  of the course, but will often 'hit a wall' when you start the material of Chapter 10 (Sequences and Series).

Alternate orderings:

1. Because of the challenges students face with sequences and series, some have put that material earlier in the course, like right after the techniques of integration (Chapter 7) and before applications (Chapter 8 & parts of Chapter 6). Just make sure that you leave enough time to finish all the required material.
2. If you are used to the order in Stewart, you can approximate it by doing Chapter 5, then Chapter 7, then 6, 8 and 10.