

3450:222-005 Analytic Geometry-Calculus II

Dr. Laura Gross, Instructor
Mr. Wesley Farriss, Learning Assistant
Spring 2007

COURSE OBJECTIVES

In this course you will learn new calculus techniques and differentiate and integrate functions you did not see in Calculus I.

You will also further develop your analytical geometry skills by solving problems using *both* algebra and geometry together.

You'll become even more sophisticated at reading, analyzing, and writing technical material and reasoning *very* precisely.

Specific topics will include derivatives of exponential, logarithmic, trigonometric, inverse trigonometric, hyperbolic, and inverse hyperbolic functions. You'll represent and analyze functions via parametric equations and polar coordinates. You'll learn more methods for finding and approximating integrals, plus look at more applications of integration. You'll analyze the behavior of integrals whose integrands are discontinuous and those whose upper and/or lower limits of integration are infinite. You'll study sequences (infinite lists of values) and series (infinite sums).

COURSE MATERIALS

Either *Calculus*, Stewart, 5th ed., 2003 (includes Calc III) or *Single Variable Calculus*, Stewart, 5th ed., 2003 (does not include Calc III): required

Graphing calculator: TI-86 or below allowed on most exams and quizzes

How to Ace the Rest of Calculus: The Streetwise Guide, Adams, Hass, and Thompson: on reserve in Bierce Library

CONTACT INFORMATION

Laura	Office Phone Email FAX Web	Arts and Sciences (CAS) 266 (330) 972-6829 gross@math.uakron.edu (330) 374-8630 (Write "Laura Gross" on the top.) http://www.math.uakron.edu/~gross
Wesley	Study table Phone E-mail	Carroll Hall (CH) second floor (330) 608-3014 wesley2@uakron.edu

OUTSIDE HELP

- **Laura's office hours in CAS 266** are as below. Please see the web site for **updates**.

- Mondays and Wednesdays 2:15–3:05 p.m.
- Tuesdays 11:15 a.m.–1:00 p.m.
- Fridays 11:15 a.m.–1:00 p.m., 2:15–3:05 p.m.

(OVER)

- Wesley will host a **study session on Wednesday, January 17** from 7:00–8:00 p.m. in CAS 145. Please try to attend to get insider tips on how to succeed in Calculus II, plus get help with Calculus I review. Wesley will finalize this semester’s study session time, plus two hours of **study table** (tutoring) times after getting student feedback.
- **Bring your Zip Card to study sessions and study tables.** The Supplemental Instruction (Learning Assistant) program on campus requires us to keep student ID attendance records.
- In case you can’t attend scheduled office hours, make an appointment with Laura, preferably at least one day in advance.
- If you wish, you may go to Carroll Hall, Room 208, Monday through Friday and request additional free tutorial assistance. Call (330) 972-5214 for further information.

PREREQUISITES

You are responsible for having completed Analytic Geometry-Calculus I 3450:221 or equivalent with a grade of C- or better. If you have not met the prerequisite, you might be administratively withdrawn from the course without refund.

POLICIES

- ATTENDANCE
 - The course meets Mondays, Tuesdays, Wednesdays, and Fridays 1:10–2:00 p.m. in JAR 45.
 - Attendance plays an important role in your grade: Good attendance helps you perform well in the course. People who attend infrequently almost always drop or fail the course. Your attendance record is one indicator of how much effort you are putting into learning.
- HOMEWORK
 1. Homework will be collected once or twice a week. The first assignments will be drawn from the list of problems attached; changes/additions will be announced in class.
 2. Please keep a copy of your homework, so that you can refer to your work when the grader has your original.
 3. Please start writing on a new sheet of paper for each new section of problems you begin.
 4. To receive full credit, homework must
 - be on clean 8 1/2 by 11 inch paper,
 - be stapled,
 - be neat and clear.
 5. When the grader looks at each of your homework problems, he or she should be able to understand what you are doing without looking at the book. To receive full credit, you need to (1) indicate what the question is, (2) show your work, and (3) use complete sentences whenever discussion is required.
 6. Feel free to work together on homework. Discussion with a classmate often helps you learn. However, **you must write up the homework by yourself.**

7. You may submit late homework at your own risk. If the grader has already completed the grading at that point, you will receive a grade of zero. **Homework submitted by email will not generally be graded.** Homework submitted to Laura's mailbox in CAS 220 or by fax and received by the grader by the due date/time *will* be graded; please write "Laura Gross" on the fax.
 8. Each assignment will be graded out of 20 points. Four points will be based on the completeness of the assignment, and 16 points will be based on the careful grading of four problems chosen at random.
 9. At the end of the semester, your three lowest homework grades will be dropped.
- QUIZZES
 1. On-line quizzes will be given approximately once a week.
 2. At the end of the semester, your lowest quiz grade will be dropped.
 - EXAMS
 - There will be four exams during the semester. The tentative exam schedule is in the syllabus below. Makeup exams are given at the instructor's discretion. Unless there is an emergency, you must contact Laura before the exam to be considered for a makeup.
 - The comprehensive final exam will be **Monday, May 7 8:00–9:55 a.m.** at a place to be announced. No make-up tests will be available.
 - GRADES
 - Course grades are determined by:

four exams	10% each
homework	20%
quizzes	15%
comprehensive final exam	25%
 - The tentative grade scale is A 90-100%, B 80-89%, C 70-79%, D 60-69%, F 0-59% with cut-offs for plus/minus grades at the instructor's discretion.
 - If you are unable to complete the course because of circumstances beyond your control, see Laura. You may be eligible for a grade of incomplete if your average on work completed is at least a C.
 - You may contest any grade up until one week after the work was returned in class.
 - When work is returned to you, save it. Also, keep a running log of your grades. If you have any questions about the instructor's records, you must be able to show the relevant work.
 - REGISTRATION AND WITHDRAWAL
 1. You must register for the class during the first two weeks of school. The last day to add the class without signatures is January 22, 2007. You need instructor, advisor, and dean signatures to add the class January 23–30, 2007.
 2. The last day to drop the course without "WD" appearing on your academic record is Tuesday, January 30, 2007.
 3. Withdrawal from the course is permitted at any time on or before Friday, March 9, 2007 with your advisor's signature. After that date, the instructor's signature is also required. After Friday, April 13 at 4:30 p.m., University policy prohibits withdrawal from any class. All withdrawals must be processed by the registrar by that date. **(OVER)**

RESPONSIBILITIES

1. Adhere to academic honesty policies. (See handout.) They will be strongly enforced.
2. All pagers, cellular phones, etc. must be turned off during class time.
3. To remain in the class you must, of course, behave courteously and appropriately.

TIPS FOR SUCCESS

- Successful calculus students rely on good study skills, not in-born talent. In order to do well in this course, you must practice extensively—keep up with the homework, be patient, persevere, and ask questions.
- Aim for an A. Students who aim low usually fall short of their goals.
- Take an active approach to learning the material. Watching an instructor explain it is insufficient for learning. **A standard rule for college mathematics is to spend about two hours outside of class for each hour in class.**
- Read the sections at least briefly before lecture, so the lecture will be more understandable.
- Attend the lecture, and pay attention. Failure to attend class is a very common cause of low course grades.
- Read the sections in detail after lecture and go back over your notes.
- Do all of the assigned and suggested homework and more if you need to.
- Asking questions is one of the smartest things you can do. Coming to office hours, study sessions, and study tables for further discussion is also invaluable; I can't emphasize that enough. If you have a conflict, schedule an appointment for another time. One-on-one interactions with the professor and the learning assistant are very valuable learning tools for you (AND a good way for us to get to know each other better AND important in getting your money's worth out of your education).
- Keep up to date. Come and see Laura or Wesley (or preferably both) right away if you have any difficulties or fall behind in the course.

We hope you find further exploration of calculus—as we do—both interesting and useful!

TENTATIVE SCHEDULE

Week	Date	Section	Title
1	15 Jan	MLK Day 7.2 7.1	No class on Monday Exponential functions and their derivatives Inverse functions
2	22 Jan	7.3 7.4 7.5	Logarithmic functions Derivatives of logarithmic functions Inverse trigonometric functions
3	29 Jan	7.6 7.7 8.1	Hyperbolic functions Indeterminate forms and L'Hospital's Rule Integration by parts
4	5 Feb	EXAM 1 8.1 8.2	Tuesday, 6 Feb Integration by parts Trigonometric integrals
5	12 Feb	8.2 8.3 8.4	Trigonometric integrals Trigonometric substitution Integration of rational functions by partial fractions
6	19 Feb	8.5 President's Day 8.8	Strategy for integration No class on Tuesday Improper integrals
7	26 Feb	9.1 9.2 EXAM 2	Arc length Area of a surface of revolution Friday, 2 Mar
8	5 Mar	11.1 11.2	Curves defined by parametric equations Calculus with parametric curves
9	12 Mar	11.3 11.4 11.5	Polar coordinates Areas and lengths in polar coordinates Conic sections
	19 Mar	Spring break	No classes this week
10	26 Mar	12.1 EXAM 3	Sequences Friday, 30 Mar
11	2 Apr	12.1 12.2	Sequences Series
12	9 Apr	12.3 12.4	The integral test and estimates of sums The comparison tests
13	16 Apr	12.5 12.6 12.7	Alternating series Absolute convergence and the ratio and root tests Strategy for testing series
14	23 Apr	12.8 12.9 12.10	Power series Representations of functions as power series Taylor and Maclaurin series
15	30 Apr	EXAM 4 12.10	Tuesday, 1 May Taylor and Maclaurin series
16	7 May	FINAL EXAM	8:00–9:55 a.m.

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TENTATIVE ASSIGNMENTS

Section	Problems
7.1	1, 2, 5, 12, 15, 26, 28, 35, 37, 39, 42, 43, 46
7.2	12, 13, 15, 17, 23, 25, 28, 29, 35, 38–40, 44, 45, 47, 50 or 52, 62, 72, 73, 76, 78
7.3	1, 2, 3, 5, 7, 9, 13, 17, 19, 24, 27, 31, 33, 34, 34, 42, 43, 49, 51, 53, 56, 57, 60, 64, 67, 71
7.4	4, 5, 16, 19, 20, 23, 25, 31, 40, 44, 45, 51, 66, 67, 70, 74, 78
7.5	1, 4, 5, 10, 13, 21–23, 28, 31, 34, 37, 44, 45, 49, 59, 62, 65, 69, 70
7.6	3, 6, 9, 23a, 23g, 33, 37–39, 43, 55, 58, 62 (Extra credit: 50)
7.7	1–4, 7, 15–18, 22, 25, 31, 37, 42, 47, 54, 55, 59, 61
8.1	1, 3, 4, 7, 13, 15, 17, 20, 21, 23, 25, 29, 45, 61, 62 or 64
8.2	3, 7, 13, 17, 21, 29, 33, 37, 41, 55, 63, 65 or 67
8.3	3, 7, 13, 17, 21, 25, 29, 31
8.4	2a, 3b, 4b, 7, 8, 19, 21, 29, 37, 43, 45, 48, 50, 53, 61
8.5	1, 6, 7, 22, 28, 58, 70, 75, 77, 79
8.8	1, 5–39 odd, 49–53 odd
9.1	2, 8, 9, 11, 13, 15, 18, 19, 27, 29, 30
9.2	1, 3, 5, 7, 9, 11, 13, 15, 21, 23, 25 (Extra credit: 33)
9.3	19, 21, 23, 25, 27, 29, 31, 33, 35, 39
11.1	2, 8, 14, 16, 17, 20, 23, 24, 33, 36
11.2	1, 4, 8, 10, 14, 19, 25, 26, 31, 33, 39, 41, 51, 61, 65
11.3	1–6: (b) only, 7, 10, 13, 16, 19, 22, 25, 27, 31, 35, 40, 42, 44, 45, 55, 58, 62, 63
11.4	1, 2, 5, 8, 11, 14, 17, 21, 25, 28, 29, 33, 39, 41, 45, 46
11.5	Graphs, vertices, and asymptotes only in all of these problems: 2–8 even, 12–16 even, 20–30 even
12.1	1, 5, 6, 7, 11, 12, 17, 18, 21, 22, 26, 28, 33, 34, 35, 51, 54, 57, 58, 61, 66
12.2	1, 2, 9, 10, 13, 16, 19, 21, 23, 24, 26, 27, 29, 30, 41, 44, 49, 50
12.3	1, 3, 5, 7, 9, 11, 15, 19, 21, 25, 27, 31, 33
12.4	1, 2, 5, 9, 13, 17, 23, 27, 29, 31, 35
12.5	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 29, 31, 33
12.6	1, 3, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31
12.7	Multiples of three except 36
12.8	1, 2, 5, 8, 9, 13, 14, 17, 24, 27, 29, 30, 31
12.9	1, 2, 3, 6, 9, 11, 13, 14, 18, 23, 25, 28, 29, 37
12.10	1, 2, 4, 5, 7, 10, 11, 13, 14, 15, 25, 26, 30, 31, (37, 51, 54, 55, 57, 60)
12.12	3, 4, 15, 21, 26