

Math 122: Calculus II

2022

Calculus: Early Transcendentals, Smith & Minton, Chapters 5,7,8,12,13

Dr. Roland Minton, Trexler 270-C, 375-2358

office hours sign up for 15 min appts
at calendly.com/minton/15min

minton@roanoke.edu

Course Objectives: *Continue to learn how to do mathematics!* Mathematics is a problem-solving discipline, and we are all constantly learning. The best way to learn is to focus on technique and not on memorization. My role as professor is to guide discussions and help you take the next step from wherever you are mathematically. One objective is for you to have a sound enough understanding of calculus that you can recognize it and apply it in future courses. This will not happen if you have just memorized your way through some problems. A broader objective is for you to be a good problem-solver, to help you excel at whatever entrance examinations and job situations are in your future. Finally, an important objective is to enjoy the course. Calculus is the gateway to the awesome world of modern science. Let yourself be amazed!

Intended Learning Outcomes: At the end of the course, successful students will be able to

- Apply appropriate tests of convergence to a variety of infinite series
- Apply power series to solve problems in modern mathematics
- Recognize and interpret different applications of integration
- Apply multivariable calculus techniques to compute quantities of interest
- Recognize the role of technology in calculus, understand when it should be used, and be aware of its limitations

Equipment: We will use Mathematica, a powerful mathematical software package, in class and in labs. A personal copy for your personal computer is recommended, so that you can have it in class daily. Regular visits to your Inquire site (for all of your courses) is required. Assignments, extra materials, and grades will be posted regularly.

Attendance Policy: Regular attendance is expected. This means both physical and mental attendance. For most students, taking notes and asking questions are good ways of making the best use of class time. You are responsible for everything done in class, through your attendance and sharing class notes with classmates. If you miss a class, e-mail me before class is over and explain why. **If you have two unexplained absences, you will be dropped from the course after being sent a warning notice.**

I expect you to spend at least 12 hours of work each week inside and outside of class. You should expect to spend more time on material that is difficult for you.

Academic Integrity: The college policy is fully supported. Tests and are closed notes, closed book. Homework assignments will be discussed in class, and you may always ask me for help. **Do not** collaborate on homework. No electronic devices are allowed in a test situation.

Co-Curricular: During the course of the semester, you must attend at least two co-curricular events approved by the MCSP department. For each, write a two-paragraph description of the event, due within a week of the event. A sample is provided on the Inquire site. Schedules for the talks can be found online at the MCSP department website and in Trexler hallways.

https://www.roanoke.edu/inside/a-z_index/math_cs_and_physics/conversation_series/spring_2022

Tests: There will be six tests and a final exam. Each test will cover all material discussed since the previous test. Anticipated test dates are (F) 2/4, (F) 2/18, (F) 3/4, (F) 3/25, (F) 4/8, (F) 4/22. The exam is Thursday, April 28, 8:30-11:30.

Make-ups: In case of sickness or scheduling conflicts, get in touch with me ASAP.

Study problems and homework: A problem set will be due each Friday (excluding week 1) that we do not have a test. These will be assigned on the previous Friday and are closely modeled after the study problems. Your homework should be neat and organized, and turned into Inquire in pdf format. It is due at the beginning of class on the designated days. Late papers lose up to 30% of the grade and will not be accepted after the following Monday. You may use the book and your notes for help, but do not collaborate with others or get any help from online sites. Study problems indicate what you are responsible for (some material in the book will be skipped) but are **not** to be turned in. The list of study problems is on page 4.

Grading: Homework counts 25%. Class participation and co-curricular reports count 5%. The exam and tests count 70% of the final average. Grades may be curved up based on extenuating circumstances.

A: 93-100 A-: 90-92 B+: 87-89 B : 83-86 B-: 80-82 C+: 77-79 C: 73-76 C-: 70-72
D+: 67-69 D: 63-67 D-: 60-62 F: 59 and below

Special Classroom Policies for 2022SP

1. Face coverings/masks must be worn over the mouth and nose by all students and instructors in classrooms. Students who come to class without a face mask that is being worn properly will be asked to leave and will be readmitted only after they are wearing one.
2. If you have a temperature of 100.4 or higher or other coronavirus symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. Do keep up with all readings, assignments, and deadlines.
3. If the college is forced to suspend in-person attendance, this class will continue to meet via Zoom at our regular time. I will distribute an amended syllabus. You will need internet connectivity. If you have technology challenges, email me as soon as the decision is made to go remote so that we can discuss how you can keep up. Office hours will continue via Zoom.
4. The fall semester saw another increase in the number of academic integrity charges, mostly cheating and many of them related to online work. The use of Chegg, Course Hero, and similar "homework help" sites for Reports and Tests is prohibited.
5. Subject Tutoring, located on the lower level of Fintel Library (Room 5), is open 4 pm – 9 pm, Sunday – Thursday. We are a Level II Internationally Certified Training Center through the College Reading and Learning Association (CRLA). Subject Tutors are friendly, highly-trained Roanoke College students who offer free, one-on-one tutorials in a variety of general education and major courses, see subjects at www.roanoke.edu/tutoring. Tutoring sessions are available in-person or online in 30 or 60-minute appointments (please specify if you prefer to meet with a tutor online or in-person when you make your appointment). Schedule an appointment at www.roanoke.edu/tutoring, or contact us at 540-375-2590 or subject_tutoring@roanoke.edu.

Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Laura Leonard, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Laura Leonard at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

1/17		
1/19	Differential Equations	Section 7.1
1/21	Differential Equations	Section 7.1
1/24	Area Between Curves	Section 5.1
1/26	Area Between Curves	Section 5.1
1/28	Volume	Section 5.2 HW 1 due
1/31	Projectile Motion	Section 5.5
2/2	Projectile Motion	Section 5.5
2/4	TEST #1	
2/7	Probability	Section 5.7
2/9	Integration by Parts	Section 6.2
2/11	Improper Integrals	Section 6.6 HW 2 due
2/14	Sequences	Section 8.1
2/16	Sequences	Section 8.1
2/18	TEST #2	
2/21	Infinite Series	Section 8.2
2/23	Infinite Series	Section 8.2
2.25	Alternating Series	Section 8.4 HW 3 due
2/28	Ratio Test	Section 8.5
3/2	Ratio Test	Section 8.5
3/4	TEST #3	
3/14	Power Series	Section 8.6
3/16	Power Series	Section 8.6
3/18	Taylor Series	Section 8.7 HW 4 due
3/21	Taylor Series	Section 8.7
3/23	Applications	Section 8.8
3/25	TEST #4	
3/28	Functions	Section 12.1
3/30	Partial Derivatives	Section 12.3
4/1	Gradient	Section 12.7 HW 5 due
4/4	Extrema	Section 12.7
4/6	Extrema	Section 13.1
4/8	TEST #5	
4/11	Double Integrals	Section 13.1
4/13	Volume	Section 13.2
4/15		HW 6 due
4/18	Polar Coordinates	Section 9.4,13,3
4/20	Polar Coordinates	Section 13.3
4/22	TEST #6	
4/25	Review	
4/26	Review	
4/28	Final Exam	8:30-11:30

Study Problems

Section 7.1	page 506	#1-4,9-12,17-22,29-32,35-38
Section 5.1	page 383	#1-10,43-44
Section 5.1	page 383	#19-24,37-40
Section 5.2	page 397	#1-10,13-14,37-39
Section 5.5	page 420	#1-6,9-12,29-30,37
Section 5.5	page 421	#21-26,35-36,43-44
Section 5.7	page 441	#3-10,13-14,17-20
Section 6.2	page 457	#1-8,19-22,41-44
Section 6.6	page 493	#1-4,7-10,35-38,49
Section 8.1	page 550	#1-4,13-24
Section 8.1	page 550	#25-28,43-44,55-56,61-62
Section 8.2	page 559	#1-6,21-26,39-40
Section 8.2	page 559	#11-12,15-16,19-20,49,51-54
Section 8.4	page 578	#1-12,25-26,47-48
Section 8.5	page 586	#1-4,7-8,11-12,15-16
Section 8.5	page 586	#33-38,61-62
Section 8.6	page 593	#1-8,11-14
Section 8.6	page 593	#19-22,25-30,35-38
Section 8.7	page 605	#1-6,9-12
Section 8.7	page 605	#25-32
Section 8.8	page 613	#3-12
Section 12.1	page 826	#1-2,7-8,15-20,27-32,49-50,57
Section 12.3	page 849	#1-6,9-14,57-58
Section 12.7	page 892	#1-8,39-40
Section 12.7	page 892	#9-12,45-48,56-58
Section 13.1	page 922	#5-8,11-16
Section 13.1	page 922	#25-30,39-44
Section 13.2	page 931	#7-10,13-18
Section 9.4	page 666	#1-4,7-10,19-22,29-34
Section 13.3	page 939	#7-12,17-22,25-36

Math 122 Information Sheet

Name:

Email:

Cell phone:

Intended Major:

Hometown:

List any other college math courses you have taken.

Briefly describe why you think math is useful.

What are your expectations and goals for this course?

What are some of the co-curricular or other campus activities you would like to participate in this year?