MATH 122 A: Calculus II
Fall 2025, MWF 1:10-2:10, Trexler 374

Instructor: Dr. Michael Weselcouch
Office: Trex #270F
Student Hours: MW 9:30-10:30, Th 1:00 - 2:00 or by appointment
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Course Description. The analysis of integrals, sequences and series, and their applications for functions of one or more variables.

Learning Outcomes. By the end of this course, successful students will be able to:

- apply the theory of differentiation and integration to model and solve real-world problems.
- recognize a differential equation and be able to both solve basic differential equations and discuss what a differential equation tells you about the process it models.
- determine the behavior of infinite series and understand the role of power series and Taylor series in modern mathematics.
- understand functions of several variables and their applications.
- recognize the role of technology in Calculus, understand when it should be used, and be aware of its limitations.

Course Materials.

(1) *Textbook: Calculus: Early Transcendental Functions;* Smith and Minton, 4th Edition
(2) *Calculator:* Any scientific or graphing calculator.
(3) *Computer:* A laptop computer with Mathematica installed, or access to Mathematica.
(4) *YouTube:* I will be posting supplementary videos to my YouTube channel.
(5) *MyOpenMath:* Homework will be posted here.

Attendance Policy. Class attendance is a very important aspect of a student's success in this course. The student is expected to attend every class and is accountable for missed content and assignments.

Structure and Grading. A grade scale will be determined after final grades are computed, but will be no worse than the scale given below. Attendance and class participation will be considered when determining marginal grades.

Grading Scale

		93-100	A	90-92.99	A-
87-89.99	B+	83-86.99	B	80-82.99	B-
77-79.99	C+	73-76.99	C	70-72.99	C-
67-69.99	D+	63-66.99	D	60-62.99	D-

The final course grade is determined in the following way:

Homework	15%	Tests	45%
Problem of the Day	15%	Final Exam	10%
Mathematica	15%		

Homework. There will be one homework assignment after nearly every lecture. These assignments are on our class's MyOpenMath page. All work submitted for a grade must be your own (for instance, you cannot use internet resources aside from my own YouTube videos or other videos linked on Inquire and, if you do work and study with others, the final write-up must be done by yourself). You will be granted 5 late passes at the beginning of the semester. You may apply these to any of the online assignments for an automatic 24 hour extension with no late penalty. Note that if you try to use a late pass on an assignment due say 14 days prior, you will not be able to as you would need an extension of over 14 days. You therefore need to keep up with the online homework.

Problem of the Day. We will start nearly every class with a Problem of the Day (POD). You will have about 5 minutes to complete the problem and you can use your notes (not computer) for assistance. PODs cannot be made up for unexcused absences. At the end of the semester, your lowest three POD grades will be dropped.

Mathematica. In addition to the homework, we will occasionally have assignments based in Mathematica. Mathematica is a powerful software package that. we will use throughout the class to help emphasize calculus concepts over needing to compute, say, derivatives and integrals by hand every time we need them. This software will let us spend more time on the "how and why" of calculus and what it can potentially be used for in the future. Late work will be accepted, but loses .5 percentage points for every hour (or partial hour) past the deadline.

Tests. Four tests will be given throughout the semester according to the schedule on the last pages of the syllabus (any changes from this schedule will be announced well in advance). Each test will focus on the material learned since the last test, but as with most mathematics classes, the exam will necessarily require you to understand and remember things from the past. The final exam will be comprehensive and given during the scheduled time for block 5: **December 10, 2:00-5:00 PM**.

Test Make-up Policy. Test make-ups are administered in accordance with College policy. Anticipated, excused absences must be reported to the instructor with appropriate certification *well before* the scheduled test date. Legitimate emergency absences must be reported with appropriate documentation within one week of returning to class. No other make-ups will be given.

Corrections to Grading. If you think an error may have been made in the grading of your test, carefully review the answer key posted on Inquire and then contact the instructor **within 1 week of the test's return** with your question. **Do NOT alter the original work**. The entire test may be re-graded and the test grade is *subject to remain the same, increase or decrease* at the discretion of the instructor.

MCSP Conversations. The MCSP department offers a series of talks designed to appeal to a broad audience. Members of this class are encouraged to attend many of these meetings, however attending at least one session is mandatory. The schedule for the talks is posted on Inquire. Within one week of attendance you must submit a response to the talk. This will count towards your Homework grade.

Expected Work Policy. This course expects you to spend at least 12 hours of work each week inside and outside of class.

Electronic Devices. You can use only your calculator during class unless stated otherwise. (This means no cell phones - please set them on silent and leave them in your bag.)

Inquire Policy. Students are required to be knowledgeable of all postings on Inquire. It is each student's responsibility to consistently monitor Inquire for course information. This means every day! Any assignment that requires an Inquire upload will not be accepted in any other form. Also, to receive credit for uploads, the file must be readable on the instructor's college computer. It is the student's responsibility to make successful submissions. It is the student's responsibility to resolve technology problems through the college's IT department.

Academic Integrity. I expect all of you to follow the Academic Integrity policies of Roanoke College. All work submitted for a grade must be your own (for instance, you cannot use internet resources aside from my own YouTube videos or other videos linked on Inquire and, if you do work and study with others, the final write-up must be done by yourself). If you ever have questions about how these policies apply to our class please contact me. Any violations of our AI policies will automatically be turned over to the Academic Integrity Council.

Artificial Intelligence. There are situations when the use of generative AI may be appropriate and educational. If you believe that your use of generative AI is appropriate for a given assignment, please contact me (via email, or in person at least 3 days before the due date) to explain your rationale for its use. No use is permitted without prior permission.

Subject Tutoring. 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 such as: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, INQ 250, and Social Sciences (see all available subjects at www.roanoke.edu/tutoring). Tutoring sessions are available in 30 or 60-minute appointments. Schedule an appointment at www.roanoke.edu/tutoring, or contact us at (540)375-2590 or subject_tutoring@roanoke.edu. We hope to see you soon!

AES. Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable 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. To schedule an appointment, call (540)375-2247 or e-mail aes@roanoke.edu. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact the AES at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

Course Schedule

Date	Section	Topic	Due
Wed Aug 27		Calc 1 Review	
Fri Aug 29	5.5	Projectile Motion	
Mon Sep 1	5.6	Work	
Wed Sep 3	5.6	Mass and Force	
Fri Sep 5	5.6	Worksheet	
Mon Sep 8	6.2	Integration by Parts	M1
Wed Sep 10	5.7	Probability	
Fri Sep 12	6.6	Improper Integrals	
Mon Sep 15	6.6	Improper Integrals	
Wed Sep 17		Review	
Fri Sep 19		Test 1	
Mon Sep 22	12.1	Functions of Several Variables	M2
Wed Sep 24	12.2	Limits and Continuity	
Fri Sep 26	12.3	Partial Derivatives	
Mon Sep 29	12.4	Tangent Planes and Linear Approximations	
Wed Oct 1	12.7	Extrema of Functions of Several Variables	
Fri Oct 3	12.7	Extrema of Functions of Several Variables	
Mon Oct 6	13.0	Partial Antiderivatives	
Wed Oct 8		Review	
Fri Oct 10		Test 2	
		Fall Break	
Mon Oct 20	13.1	Double Integrals	M3
Wed Oct 22	13.1	Double Integrals	
Fri Oct 24	13.2	Area	
Mon Oct 27	13.2	Volume	
Wed Oct 29	13.2	Center of Mass	
Fri Oct 31	9.4	Polar Coordinates	
Mon Nov 3	13.3	Double Integrals in Polar Coordinates	
Wed Nov 5	13.3	Double Integrals in Polar Coordinates	M4
Fri Nov 7		Test 3	
Mon Nov 10	8.1	Sequences of Real Numbers	
Wed Nov 12	8.2	Infinite Series	
Fri Nov 14	8.3	Integral and Comparison Test	M5
Mon Nov 17	8.4	Alternating Series	
Wed Nov 19	8.5	Absolute Convergence and the Ratio Test	
Fri Nov 21	8.6	Power Series	
Mon Nov 24	8.7	Taylor Series	
Wed Nov 26		**Thanksgiving Break**	
Fri Nov 28		**Thanksgiving Break**	
Mon Dec 1	8.8	Applications of Taylor Series	
Wed Dec 3		Review 4	
Fri Dec 5		Test 4	M6
Wed Dec 10		Final Exam 2:00 - 5:00	