

Instructor: Dr. Chris Lee clee@roanoke.edu Trexler 270D

Office Hours: Have a question? Please stop by my office to chat. Regular office hours are listed below, and I welcome you to contact me to make an appointment outside of these hours:

Tue: 2:50-4:00pm, Wed: 1:10-2:40pm.

Course Objectives: This course provides a continuation of the study of calculus. Topics to be studied include more applications of the definite integral, sequences and series and applications of them, and vectors and functions of one variable.

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.

Required Materials: Textbook: Calculus: Early Transcendental Functions, by Smith and Minton, 4th Edition
Lab Technology: Laptop with *Mathematica* installed

Attendance: Come to class and be prepared to actively participate - this is the best way for you to engage in the learning material and it makes our class meeting so much more fun! You should attend every class, but extenuating circumstances can arise that can make this difficult. If you cannot attend a class, please let me know. If circumstances cause you to miss more than 3 classes during the semester, you may be overextended and should consider dropping the class.

Reading and Participation: Key to learning is participation. We will strive to have an active, rather than passive, classroom environment. On Inquire is a day-by-day outline of the chapters that will be discussed in class. I fully hope that you will have read the upcoming chapter before the class meeting. You most certainly will not understand everything while you are reading ahead, but having read the section will allow you to ask questions and follow along better in class.

Late & Missed Work: Unfortunately, illnesses, death in the family, or other traumatic events are part of life. Such events are unwelcome and because I understand how difficult these times are, if you contact me within 24 hours of the event and provide documentation, I will be happy to extend deadlines and/or provide make-up work.

Expected Hours of Work: To be successful in this course it is anticipated that you will put in at least 12 hours of work inside and outside of class each week.

Academic Integrity: Students are expected to follow the integrity policy detailed in the handbook *Academic Integrity at Roanoke College*. Additionally, if you are ever uncertain as to how the College's policy pertains to any assignment or exam in this course, please ask me for clarification. The bottom line is that all work that a student submits for a grade must be **solely** the work of that student unless the instructor has given explicit permission for students to work together.

Retrieval Practice: A clear and most important goal of this course is to give you an exposure to and understanding of calculus. There is a large difference between the intake of course information, and the retrieval of such information. And, shown by study after study, if you wish to be able to retrieve information you must PRACTICE retrieving information. To aid in this retrieval practice there are a variety of assessment activities throughout the term, the goal being higher frequency with less weight on any particular event. You will encounter:

- Daily Homework: Homework will be assigned virtually every day, and on almost all Mondays and Wednesdays select problems will be collected. This element of the course is key to your success.
- Weekly Quizzes: On most Fridays there will be a short quiz at the end of class.
- Testing: There are four tests and a final exam.

Everything is Cumulative: You will find that virtually every day in class we will be combining information from previous chapters with material we are currently studying, and this pattern will carry over to all your graded work. I am committed to helping you put together a large course basket of knowledge this semester and to giving you frequent opportunities to practice retrieval of this knowledge. To that end, all quizzes, tests, and the final exam are cumulative. On any one of these approximately 50% of the assessment will be on fundamentals of previous material and 50% on new material.

Course Grade Update: Components of a student's grade will be weighted as follows:

Tests: 50% Quizzes: 15% Homework: 15% Final Exam: 15% Project: 5%

A scale will for final grades will not be lower than the scale given below.

0	60	63	67	70	73	77	80	83	87	90	93
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

Math 122 - Spring 2023 - Daily Schedule

Jan 18	W	Introduction	
Jan 20	F	5.1 - Area Between Curves	
Jan 23	M	5.2 - Volume	<i>HW Due</i>
Jan 25	W	5.2 - Volume	<i>HW Due</i>
Jan 27	F	5.5 - Projectile Motion	<i>Quiz</i>
Jan 30	M	5.5 - Projectile Motion	<i>HW Due</i>
Feb 1	W	5.6 - Applications of Integration	<i>HW Due</i>
Feb 3	F	5.7 - Probability	<i>Quiz</i>
Feb 6	M	Review	
Feb 8	W	Test	
Feb 10	F	6.2 - Integration by Parts	
Feb 13	M	6.6 - Improper Integrals	<i>HW Due</i>
Feb 15	W	6.6 - Improper Integrals	<i>HW Due</i>
Feb 17	F	12.1 - Functions of Several Variables	<i>Quiz</i>
Feb 20	M	12.3 - Partial Derivatives	<i>HW Due</i>
Feb 22	W	12.3 - Partial Derivatives	<i>HW Due</i>
Feb 24	F	12.7 - Extrema of Functions	<i>Quiz</i>
Feb 27	M	12.7 - Extrema of Functions	
Mar 1	W	Review	
Mar 3	F	Test	
Spring Break			
Mar 13	M	13.1 - Double Integrals	
Mar 15	W	13.1 - Double Integrals	<i>HW Due</i>
Mar 17	F	13.2 - Area, Volume, Center of Mass	<i>Quiz</i>
Mar 20	M	13.2 - Area, Volume, Center of Mass	<i>HW Due</i>
Mar 22	W	9.4 - Polar Coordinates	<i>HW Due</i>
Mar 24	F	13.3 - Double Integrals in Polar	<i>Quiz</i>
Mar 27	M	Review	
Mar 29	W	Test	
Mar 31	F	8.1 - Sequences	
Apr 3	M	8.2 - Series	<i>HW Due</i>
Apr 5	W	8.5 - Ratio Test	<i>HW Due</i>
Apr 7	F	no class meeting	<i>Quiz</i>
Apr 10	M	8.6 - Power Series	<i>HW Due</i>
Apr 12	W	8.7 - Taylor Series	<i>HW Due</i>
Apr 14	F	no class meeting	<i>Quiz</i>
Apr 17	M	8.7 - Taylor Series	
Apr 19	W	Review	
Apr 21	F	Test	
Apr 24	M	Review	
Apr 28	F	Final Exam	8:30-11:30am