Fall 2017

Math 118 Differential Calculus

Instructor: C. M. Staniunas

Office: 161 D Trexler Hall

Office hours: MWF 9:40-10:40am and 12-1 pm
TTh 10:00am-noon

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Course Description This course introduces calculus, with integrated precalculus and a review of relevant topics. Calculus topics include the study of limits, derivatives, and graphing. Precalculus topics, which will be presented and reviewed as they are needed, include factoring, trig. functions, exponents and inverse functions. An additional focus of the course will be the use of technology as a learning aid.

Course Objective: to provide the background in the quantitative techniques necessary to better understand advanced courses in mathematics and the sciences.

Learning Outcomes: Upon completing this course, the student will be able to:
-apply techniques of differentiation to model and solve problems
-understand the role of calculus and the infinitesimal in modern mathematics
-calculate, by hand, rudimentary limits and derivatives
-understand and manipulate the various types of functions
- recognize the role of technology in Calculus, understand when it should be used, and be awareof its limitations

Text: Calculus: Early Transcendental Functions, 4th edition, Smith and Minton.

Calculator Requirement: All students will need a **graphing** calculator for this course.
Other electronic devices laptop computers, sometimes.

Test Schedule	
Test 1	September 20
Test 2	October 13
Test 3	November 13
Test 4	December 6
Final Exam	Tuesday Dec. 12, 8:30 am

If illness or family emergency causes you to miss a test, notify me. You will be expected to take it as soon as possible, preferably within 48 hours Also, please note that arrangements for extended time on testing in a distraction-reduced environment must be made at least one week *before every test.*

Grading Policy:

Average of in-class quizzes and MCSP responses	15%
Inquire quizzes	10%
Mathematica projects	15%
Tests	10% each
Comprehensive Final exam	20%

Your final grade will be computed using the percentages above. Grades will be assigned thus:

A 93-100	B- 80-82	D+ 67-69
A- 90-92	C+ 77-79	D 63-66
B+ 87-89	C 73-76	D- 60-62
B 83-86	C- 70-72	F under 60

Attendance Policy: If you miss four hours of class after the add date, you may be dropped from the course OR have one point deducted from your final grade for each absence after four.

You are expected to spend 12 hours per week working for this class (3 hours in class, 9^{+} hours outside of class

Academic Integrity: You are expected to be familiar with the Academic Integrity Code outlined in the booklet Academic Integrity at Roanoke College. In this class, you shall not cheat on tests or quizzes or collaborate on any assignment having the words "work independently" on it.

Quizzes We will have a short weekly quiz on the calculus material we've learned. There will be no make-up quizzes, but at the end of the semester your lowest quiz score will be dropped.

Two of your assignments will be to attend two of the MCSP colloquia and complete reaction forms about what you learned. I will provide a schedule as soon as possible. These will be averaged with your in-class quizzes.

Inquire Quizzes To help you practice the precalculus techniques learned during our reviews, there will be a quiz on Inquire for each precalculus review topic covered.

Mathematica Projects Throughout the semester, we will explore the applications of technology to the study of calculus by doing a series of Mathematica projects. These projects will introduce you to the software package Mathematica and allow you to take advantage of its graphical and computational capabilities to reinforce your understanding of calculus.

Daily Problems After each section, I will assign some problems from the book for practice. These will not be collected (the answers are in the back) and they are your chance to make sure you understand the material and to get help if you realize you need it. Feel free to work with other students on these problems.

Subject Tutoring is an Internationally Certified Tutoring Center through the College Reading and Learning Association (CRLA). Our highly trained staff offers individual tutoring appointments for the following subjects: Business, Economics, Mathematics, Modern Languages, Lab Sciences & Social Sciences. Subject Tutoring is located on the lower level of Fintel Library in room 05 from 4-9 p.m. Sun.-Thurs. Students can logon to make an appointment at www.roanoke.edu/tutoring in 15, 30 or 45 minute intervals. For questions or concerns, please contact Shannon McNeal at 540-375-2247 or mcneal@roanoke.edu.

The Office of Disability Support Services (DSS), is located in the Goode-Pasfield Center for Learning and Teaching in **Fintel Library**. DSS provides reasonable accommodations to students with documented disabilities. To register for Disability Support Services, students must self-identify to the Office of Disability Support Services, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact JoAnn Stephens-Forrest, MSW, Coordinator of Disability Support Services, at 540-375-2247 or e-mail her at: stephens@roanoke.edu to schedule an appointment. If you have registered with DSS in the past, and would like to receive academic accommodations for this semester, please contact Ms. Stephens-Forrest at your earliest convenience, to schedule an appointment.

Course Schedule

The following schedule is approximate and subject to change except for the test dates. It should give you an idea of the timing of the topics covered and assignments. Sections of the book marked with a * will include precalculus review using Chapter 0 of the text.

Day	Date	Topics
W	A30	1.1 Preview of Calculus
F	S1	1.2 Intro to Limits
M	S4	Intro Mathematica: Project 1
W	S6	1.3* Computing Limits
F	S8	1.3/1.4
M	S11	1.4 Continuity
W	S13	1.5 Limits with Infinity Project 2
F	S15	1.5
M	S18	Review
W	S20	**Test 1**
F	S22	1.6* Formal Definition of Limits
M	S25	1.6/2.1
W	S27	2.1* Tangent Lines and Velocity
F	S29	Motion Detector Activity Project 3
M	O2	2.2* Derivatives
W	O4	2.2* Project 4
F	O6	2.3* Computing Derivatives
M	O9	2.3
W	O11	Review
F	O13	**Test 2**
		Fall Break
M	O23	2.4 Product and Quotient Rules
W	O25	2.4/2.5 Project 5
F	O27	2.5* Chain rule
M	O30	Which Rule to Use?
W	N1	2.6* Trig Derivatives
F	N3	2.6 Project 6
M	N6	2.7* Exponential Derivatives
W	N8	2.7
F	N10	Review
M	N13	**Test 3**
W	N15	2.8* Implicit Differentiation
F	N17	2.8/2.10 Project 7
M	N20	2.10 Mean Value Theorem
		Thanksgiving Break
M	N27	3.1 Linear Approximation
W	N29	3.1/3.2 Project 8
F	D1	3.2 L'Hôpital's Rule
M	D4	Review
W	D6	**Test 4**
F	D8	Review
T	D12	**Final Exam 8:30 am**