M 408C: Differential and Integral Calculus

Course Format: Online, Self-Paced

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Course Credits: 4

Prerequisites: An appropriate score on the mathematics placement exam or Mathematics 305G with a grade of at least B-. Students must have the approval of the University Extension advisor to enroll in this course.

Skills and Experience Flag: Quantitative Reasoning

How This Course Works
This course is online and is self-paced. Students have five months from their date of enrollment to complete the course. All coursework and proctored exams are submitted or taken online.

While this course is self-paced in terms of when you complete the work and submit assignments, periodic assessments are critical to ensuring that students receive adequate support and are able to achieve the intended learning outcomes. Thus, this course is organized into modules that must be completed in order. Students will only be able to move forward once they have received a grade on all assessments within a given module.

Review the course outline and assignment descriptions carefully. Computer-graded assignments are scored immediately. You can expect to receive feedback on instructor-graded assignments or exams within three business days following submission. This does not include weekends or holidays. Requests for expedited grading are not accommodated, so please plan accordingly. During certain times (end of semester, spring break, etc.), instructors may experience higher-than-usual demands on their time and may need additional time for evaluation. Students should reach out to University Extension at uex@austin.utexas.edu with any concerns regarding grading turnaround.

University Extension strongly advises students to be aware of when they may need a course grade to be recorded on their transcript. It can take up to two weeks after the final exam is complete for a grade to be officially recorded with the Office of the Registrar.

Course Overview

M408C is UT's standard first-year calculus course. It is directed at students in the natural and social sciences and at engineering students. The emphasis in this course is on problem solving, not on the presentation of theoretical considerations. While the course necessarily includes some discussion of theoretical notions, its primary objective is not the production of theorem-provers. M408C includes most of the elementary topics in the theory of real-valued functions of a real variable: limits, continuity, derivatives, maxima and minima, integration, area under a curve, volumes of revolution, trigonometric, logarithmic and exponential functions and techniques of integration.

Required Materials

Required Text: *Calculus Early Transcendentals, 8th edition*. Stewart, J. Belmont, CA: Brooks Cole. ISBN: 9781285741550.

You must also purchase a non-refundable Quest subscription for this course.

Course Organization

There are four modules containing 12 lessons, each covering 2–3 sections of book content in this course. There is also a midterm exam and a final exam. In each lesson you will find these sections: objectives and reading assignment, Quest learning modules, computer-graded Quest assignments, homework hint videos, and instructor-graded book homework assignments.

You must receive a grade on all assignments in a module before the next module will open.

Computer-Graded Assignments

In each lesson you'll be asked to complete several Quest assignments. For each book section, there is a Quest learning module, which is essentially a YouTube lecture with examples, and a Quest homework assignment where you can practice lots of problems. All Quest items, whether they are learning modules or homework assignments, will be lumped into one group in Canvas and will be worth 10% of your course grade. Computer-graded assignments may only be taken once.

Instructor-Graded Assignments

There is one written homework assignment in each lesson. You can write or type up these assignments in any way you wish, and your instructor will grade your homework and offer feedback through Canvas.

Exams

This course requires you to complete a midterm exam and a final exam. The midterm exam covers material from the first six lessons and is worth 35% of your course grade. The final exam is comprehensive, covering all 12 lessons, and is worth 40% of your course grade.

You must pass the final exam to pass the course.

Course Outline

Module	Topics	Assessments
1	Lesson 1: Exponential Functions; Inverse Functions and Logarithms	▪ Computer-Graded Assignment 1 ▪ Computer-Graded Assignment 2 ▪ Computer-Graded Assignment 3 ▪ Computer-Graded Assignment 4 ▪ Computer-Graded Assignment 5 ▪ Instructor-Graded Assignment 6
	Lesson 2: The Limit of a Function; Calculating Limits Using the Limit Laws; Continuity	▪ Computer-Graded Assignment 7 ▪ Computer-Graded Assignment 8 ▪ Computer-Graded Assignment 9 ▪ Computer-Graded Assignment 10 ▪ Computer-Graded Assignment 11 ▪ Instructor-Graded Assignment 12
	Lesson 3: Limits at Infinity; Horizontal Asymptotes; Derivatives and Rates of Change; The Derivative as a Function	▪ Computer-Graded Assignment 13 ▪ Computer-Graded Assignment 14 ▪ Computer-Graded Assignment 15 ▪ Computer-Graded Assignment 16 ▪ Computer-Graded Assignment 17 ▪ Computer-Graded Assignment 18 ▪ Instructor-Graded Assignment 19
2	Lesson 4: Derivatives of Polynomials and Exponential Functions; The Product and Quotient Rules; Derivatives of Trigonometric Functions	▪ Computer-Graded Assignment 20 ▪ Computer-Graded Assignment 21 ▪ Computer-Graded Assignment 22 ▪ Computer-Graded Assignment 23 ▪ Computer-Graded Assignment 24 ▪ Instructor-Graded Assignment 25
	Lesson 5: The Chain Rule; Implicit Differentiation; Derivatives of Logarithmic Functions	▪ Computer-Graded Assignment 26 ▪ Computer-Graded Assignment 27 ▪ Computer-Graded Assignment 28 ▪ Computer-Graded Assignment 29 ▪ Computer-Graded Assignment 30 ▪ Computer-Graded Assignment 31 ▪ Instructor-Graded Assignment 32
	Lesson 6: Rates of Change in the Natural and Social Sciences; Linear Approximations and Differentials	▪ Computer-Graded Assignment 33 ▪ Computer-Graded Assignment 34 ▪ Computer-Graded Assignment 35 ▪ Computer-Graded Assignment 36 ▪ Computer-Graded Assignment 37 ▪ Instructor-Graded Assignment 38
	MIDTERM EXAM	

Module	Topics	Assessments
3	Lesson 7: Maximum and Minimum Values; The Mean Value Theorem; How Derivatives Affect the Shape of a Graph	- Computer-Graded Assignment 39 - Computer-Graded Assignment 40 - Computer-Graded Assignment 41 - Computer-Graded Assignment 42 - Computer-Graded Assignment 43 - Computer-Graded Assignment 44 - Instructor-Graded Assignment 45
	Lesson 8: Indeterminate Forms and l'Hospital's Rule; Optimization Problems	- Computer-Graded Assignment 46 - Computer-Graded Assignment 47 - Computer-Graded Assignment 48 - Computer-Graded Assignment 49 - Instructor-Graded Assignment 50
	Lesson 9: Newton's Method; Antiderivatives	- Computer-Graded Assignment 51 - Computer-Graded Assignment 52 - Computer-Graded Assignment 53 - Computer-Graded Assignment 54 - Instructor-Graded Assignment 55
4	Lesson 10: Areas and Distances; The Definite Integral; The Fundamental Theorem of Calculus	- Computer-Graded Assignment 56 - Computer-Graded Assignment 57 - Computer-Graded Assignment 58 - Computer-Graded Assignment 59 - Computer-Graded Assignment 60 - Computer-Graded Assignment 61 - Instructor-Graded Assignment 62
	Lesson 11: Indefinite Integrals and the Net Change Theorem; The Substitution Rule	- Computer-Graded Assignment 63 - Computer-Graded Assignment 64 - Computer-Graded Assignment 65 - Computer-Graded Assignment 66 - Instructor-Graded Assignment 67
	Lesson 12: Areas Between Curves; Volumes	- Computer-Graded Assignment 68 - Computer-Graded Assignment 69 - Computer-Graded Assignment 70 - Computer-Graded Assignment 71 - Instructor-Graded Assignment 72
FINAL EXAM		

Grade Calculation
Your final grade for the course will be calculated as follows:

12 Instructor-Graded Assignments	15%
60 Computer-Graded Assignments	10%
Midterm Exam	35%
Final Exam	40%

You must pass the final exam to pass the course. You must also earn an overall passing grade:

A	100-93%	B+	89.9-87%	C+	79.9-77%	D+	69.9-67%	F	59.9-0%
A-	92.9-90%	B	86.9-83%	C	76.9-73%	D	66.9-63%		
		B-	82.9-80%	C-	72.9-70%	D-	62.9-60%		

Getting Help
- Technical Support: uextechsupport@austin.utexas.edu
- For content questions or questions about assignment and grades, use the Inbox tool within Canvas to contact the course instructor.
- For other questions (registration, transcripts, etc.), contact University Extension.

University Extension Policies
Full University Extension policies for self-paced courses may be found on the University Extension website.

Scholastic Dishonesty
Students in this course are expected to work independently, without direct supervision, and to conduct themselves responsibly in accordance with that freedom. To obtain the greatest benefit from their course work, and for the sake of everyone enrolled in our courses, students must demonstrate the willingness to exercise self-discipline, personal responsibility, and scholastic integrity.

We expect the course work and exams that you submit for course credit to be yours and yours alone. Plagiarism and other forms of scholastic dishonesty are serious academic violations that will not be tolerated. The penalties for scholastic dishonesty include the possibility of failure in the course. Scholastic dishonesty in examinations will automatically result in a grade of *F* on the exam and an *F* in the course.

University Extension Contact Information
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