

Math 223 Section 5633 - Calculus III

Fall 2007

Professor: Dr. Jess Lenarz

Meeting Time & Place: 1:20 pm - 2:30 pm MWF, Ivers 218

Office: Ivers 234E

Office Hours: MW 10:30-11:40, 2:30-4:00; T 10:30-11:40, 1:20-3:50;
ThF 10:30-11:40; or by discovery or appointment

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Website: <http://www.cord.edu/faculty/lenarz/Math223/F07/index.htm>

Text: *Calculus, Early Transcendentals*, 5th ed. by James Stewart. We will cover Chapters 12-16.

Course Objectives:

- Review and (re)learn the fundamentals of single variable calculus.
- Study the concept of vectors and their operations.
- Understand the concept of vector functions and apply calculus to these functions.
- Study multi-variable functions and generalize the concepts of differential calculus to these functions.
- Generalize the concepts of integral calculus to multi-variable functions including double and triple integrals.
- Study vector fields and generalize the concepts of calculus over scalar fields.
- To prepare the student for courses that have Calculus III as a prerequisite.

Grading: Final grades will be determined by the following components:

Component	%	Date
Self-evaluation	5 %	October 17
Instructor-evaluation	5 %	
Tutoring	5 %	
Writing Project	5 – 10 %	November 5
HW/Quizzes	20 – 40 %	Every class
Exam 1	10 – 20 %	October 3
Exam 2	10 – 20 %	October 31
Exam 3	10 – 20 %	November 21
Final Exam	10 – 20 %	December 14

For the categories where a range is given, the percentage will be up to each individual student. A form will be distributed to each student to record their choice. After the first exam, the forms must be signed and returned to me. You will not be allowed to change the percentages after that point. At the end of the semester, I will compute grades according to the percentages you have outlined.

Grades will be based on the following scale:

Percentage	Grade	Percentage	Grade
93-100	A	73-76	C
90-92	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	60-62	D-
77-79	C+	0-59	F

Self-evaluation: All students will be required to submit a self-evaluation at mid-semester, due Wednesday, October 17. You should communicate what mid-semester grade you should receive and why. I will grade these based on your justification for your grade. This is designed to be an exercise to help you reflect on your performance in class and how you might improve during the remainder of the semester.

Tutoring: There will be student-lead tutoring on Sunday, Tuesday, and Thursday nights from 7 p.m. – 9 p.m. in Jones 340. Everyone will take a turn leading the sessions. There will be a sign-up at the beginning of each chapter, with preference given to those who have not yet lead a session. After everyone has lead a session, those who would like to lead an additional session may do so for a nominal amount of extra credit on an exam. In addition, the Academic Enhancement center (AEC) in Lower Level Fjelstad has Math tutors. For more information visit the AEC homepage: <http://student.cord.edu/dept/aec/index.shtml>

Project: There will be a project assigned in early October. The goal of this project is to solve a problem by integrating the techniques learned throughout the semester and present your solution in a clear and concise paper (i.e., you will describe your solution not only with symbols but with words...). More information will be provided soon.

Quizzes & Homework: Homework problems for each section will be posted on the website. The assigned problems are due two class periods later. Every class period (except exam days) will begin with a quiz or the collection of homework problems. Late homework will not be accepted. There will be no makeup quizzes. Your three (3) lowest homework/quiz grades will be dropped at the end of the semester. The answers to selected odd-numbered problems are in the back of the book. I encourage you to work together outside of class, but you are expected to write up solutions by yourself, in your own words.

Exams: There will be 3 in-class exams given during the course as well as a comprehensive final exam. Each in-class exam will be 70 minutes long. Attendance is required for exams. If you can not attend for some reason, you must contact me BEFORE the exam to schedule a makeup exam. If you are ill the day of the exam, you must give me a doctor's note to schedule a makeup exam.

Academic Integrity: All students are expected to follow the policies set forth in the Academic Integrity section of the catalog. Cheating will NOT be tolerated. If you are caught cheating, you will receive a zero for that quiz, exam or assignment.

Calculators: Calculators may be prohibited for certain quizzes or exams. You may use a calculator at any other time, but exams will be written in such a way that a calculator gives no unfair advantage. Please see me if you need help selecting a calculator.

Partial Credit: Partial credit will be awarded. If your final answer is incorrect, but your thought processes were correct in general, you will receive some credit. In a similar manner, if no thought processes are indicated and your answer is correct, you will not receive full credit. YOU MUST ALWAYS SHOW YOUR WORK!

Attendance: Students are expected to attend and participate in class. If you aren't in class, you won't learn anything! If you must miss class due to illness, please call me and let me know. If you must miss class due to a college sponsored activity, please notify me in advance. You may be required to do makeup work for the time you are gone. A general rule of thumb is no more than three absences.

Classroom Behavior: Please respect your fellow classmates. This means not distracting other students during class with ringing cell phones, talking on the phone, talking with your neighbor, etc. I do not mind if you eat or drink during class, just clean up after yourself.

Changes: Components of this syllabus are subject to change. If changes need to be made in the syllabus, students will be involved in the decision process.

Tentative Schedule

Date	Section
Aug. 31	Syllabus & 12.1 – 3-D Coordinate Systems
Sept. 3	12.2 – Vectors
Sept. 5	12.3 – Dot Product
Sept. 7	12.4 – Cross Product
Sept. 10	12.5 – Equations of Lines and Planes
Sept. 12	12.6 – Cylinders & Quadric Surfaces
Sept. 14	12.7 – Cylindrical & Spherical Coordinates

Date	Section
Sept. 17	Problem/Catch-up Day
Sept. 19	13.1 – Vector Functions & Space Curves
Sept. 21	13.2 – Derivatives & Integrals of Vector Functions
Sept. 24	13.3 – Arc Length and Curvature
Sept. 26	13.4 – Velocity & Acceleration
Sept. 28	Problem/Catch-up Day
Oct. 1	Review
Oct. 3	Exam 1 (Chapters 12 & 13)
Oct. 5	14.1 – Functions of Several Variables
Oct. 8	14.2 – Limits and Continuity
Oct. 10	14.3 – Partial Derivatives
Oct. 12	14.4 – Tangent Planes and Linear Approximations
Oct. 15	14.5 – Chain Rule
Oct. 17	14.6 – Directional Derivatives & Gradient Vector
Oct. 19	14.7 – Maximum & Minimum Values
Oct. 22	Mid-semester Break
Oct. 24	14.8 – Lagrange Multipliers
Oct. 26	Problem/Catch-up Day
Oct. 29	Review
Oct. 31	Exam 2 (Chapter 14)
Nov. 2	15.1 & 15.2 – Double Integrals Over Rectangles & Iterated Integrals
Nov. 5	15.3 – Double Integrals Over General Regions
Nov. 7	15.4 – Double Integrals in Polar Coordinates
Nov. 9	15.6 – Surface Area
Nov. 12	15.7 – Triple Integrals
Nov. 14	15.8 – Triple Integrals in Cylindrical & Spherical Coordinates
Nov. 16	Problem/Catch-up Day
Nov. 19	Review
Nov. 21	Exam 3 (Chapter 15)
Nov. 23	Thanksgiving Break
Nov. 26	16.1 – Vector Fields
Nov. 28	16.2 – Line Integrals
Nov. 30	16.3 – The Fundamental Theorem for Line Integrals
Dec. 3	16.5 – Curl & Divergence
Dec. 5	16.7 – Surface Integrals
Dec. 7	16.4, 16.8 & 16.9 - Green's Theorem, Stoke's Theorem & The Divergence Theorem
Dec. 10	Review
Dec. 14	Final Exam (8:30 am - 10:30 pm)