

Math 121 Section 5617 - Calculus I

Fall 2005

Professor: Dr. Jess Lenarz

Meeting Time & Place: 10:30 am - 11:40 pm MWF, Ivers 214

Office: Ivers 234E

Office Hours: Monday & Wednesday 2:30-4:00,
Tuesday 10:30-12:00, 1:30-3:00;
other times by discovery or appointment

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Text: *Calculus, Early Transcendentals*, 5th ed. by James Stewart. We will cover through Chapter 5.

Course Objectives:

- Review and (re)learn the fundamentals of graphing, algebra, and trigonometry.
- Study the concept of functions and limits, from both an intuitive and computational perspective.
- Learn the rules and techniques of differentiation and be able to explain the concept of the derivative.
- Be able to use differentiation in applied and more purely mathematical contexts, including various word problems.
- Understand the concept of integration and be able to evaluate elementary integrals.
- Acquire the skill of studying and, to some degree, learning the assigned reading material before class, so that you can be a more active and constructive learner and participant in class discussion. (This is one of the differences between college-level versus high school-level work.)
- To prepare the student for courses that have Calculus I as a prerequisite.

Free Tutoring: The Mathematics Department provides a Calculus tutor Sunday, Tuesday, and Thursday nights in Ivers 218 from 5 pm to 9 pm. The Academic Enhancement center (AEC) in Lower Level Fjelstad also has Math tutors Monday through Thursday 3 pm to 5 pm and 7 pm to 9 pm, and Sunday night 7 pm to 9 pm. For more information visit the AEC homepage: <http://student.cord.edu/dept/aec/index.shtml>

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

| Component | % | Date |
|------------|------|--------------|
| HW/Quizzes | 15 % | Every class |
| Exam 1 | 15 % | September 28 |
| Exam 2 | 15 % | October 19 |
| Exam 3 | 15 % | November 9 |
| Exam 4 | 15 % | December 5 |
| Project | 5 % | November 23 |
| Final Exam | 20 % | December 15 |

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 |

Quizzes & Homework: Suggested homework problems for each section are listed below. The answers to all odd-numbered problems are in the back of the book. I encourage you to work together outside of class and to see the Calculus tutor in Ivers 218. Every class period (except exam days) will begin with a quiz on the section from the previous lecture or the collection of problems assigned last class period.

Project: There will be a project assigned later in the semester. 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.

Exams: There will be 4 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.

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 will 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.

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.

Late Policy & Makeup Exams: Makeup quizzes or exams will only be given for excused absences. An excused absence is one due to illness, college sponsored activities, or a special situation discussed with me. I must be notified ahead of time for all excused absences. The only exceptions are illness and emergencies, in which case I must be notified as soon as possible. Late homework will not be excepted except in special circumstances (illness or emergencies).

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 Daily Schedule and Suggested Problems:

| Date | Section | Exercises |
|---------|---------------------------|---|
| Sept. 2 | Chapter 1 | p. 22 21 p. 45 1,3 p. 78 1,5-9,19,23-26 |
| Sept. 5 | 2.1 - Tangent & Velocity | p. 91 1-9 odd |
| Sept. 7 | 2.2 - Limit of a Function | p. 102 5-17 odd, 23-27 odd |
| Sept. 9 | 2.3 - Calculating Limits | p. 111 1,11-17 odd, 21,35,37,45 |

| Date | Section | Exercises |
|----------|--|--|
| Sept. 12 | Fall Symposium | No Class |
| Sept. 14 | 2.5 - Continuity | p. 133 3,5,9,17,19,31,37,41,45-49 odd |
| Sept. 16 | 2.6 - Limits at Infinity | p. 146 3-9 odd, 15,19-23 odd,27,29,37,39,45,53 |
| Sept. 19 | 2.7 - Rates of Change | p. 155 3-7 odd, 11,15,17,23 |
| Sept. 21 | 2.8 - Definition of Derivative | p. 163 1-7 odd, 13,15,19,27,29,31 |
| Sept. 23 | 2.9 - Derivative as a Function | p. 173 1-15 odd, 23,27,35,38,47 |
| Sept. 26 | Review | |
| Sept. 28 | Exam 1 (Chapter 2) | |
| Sept. 30 | 3.1 - Derivatives | p. 191 3-31 odd, 39,41,45,47,49,54 |
| Oct. 3 | 3.2 - Product, Quotient Rules | p. 197 3-25 odd, 27a,31,33 |
| Oct. 5 | 3.3 - Rates of Change | p. 208 3-9 odd, 21,27,31,33,35 |
| Oct. 7 | 3.4 - Trig Derivatives | p. 216 1-15 odd, 21,23,25a,29,31 |
| Oct. 10 | 3.5 - Chain Rule | p. 224 5-17 odd, 21,25,29,33,43,45,51-55 odd, 65 |
| Oct. 12 | 3.6 - Implicit Differentiation & Inverse Trig Functions | p. 233 5-19 odd ,25,29,35,41-45 odd,65 |
| Oct. 14 | 3.7 - Higher Derivatives | p. 240 1-11 odd, 43,49,51,57 |
| Oct. 17 | Review | |
| Oct. 19 | Exam 2 (§3.1 – §3.7) | |
| Oct. 21 | Midterm Break | No Class |
| Oct. 24 | 3.8 - Log Derivatives | p. 249 3-19 odd,21,39,41 |
| Oct. 26 | 3.10 - Related Rates | p. 260 1,3,7,11,14,18-20,23,27,36 |
| Oct. 28 | 4.1 - Max/Min Values | p. 286 3-9 odd, 33,35,41-47 odd,51-59 odd |
| Oct. 31 | 4.2 - Mean Value Theorem | p. 295 1-7 odd, 11,13,17,19,23,25,35 |
| Nov. 2 | 4.3 - First Derivative Test | p. 304 1ab,5,11ab,15ab,17ab,19ab,61,63,69 |
| Nov. 4 | 4.3 - Second Derivative Test | p. 304 1cde,7,9,27-35 odd,41-45 odd |
| Nov. 7 | Review | |
| Nov. 9 | Exam 3 (§3.8 – §4.3) | |
| Nov. 11 | 4.4 - L'Hospital's Rule | p. 313 7-11 odd, 23,27-33 odd,37,41,53,57,61,71 |
| Nov. 14 | 4.7 - Optimization | p. 336 3,7,11,13,16,29,30,36,40,43,57 |
| Nov. 16 | Project | |
| Nov. 18 | Project | |
| Nov. 21 | 4.10 - Antiderivatives | p. 358 1,5,13,27,31-35 odd, 45,47,59,65,69,75,77 |
| Nov. 23 | 5.1 - Areas & Distances | p. 378 1a,3,5,11-19 odd |
| Nov. 25 | Thanksgiving Break | No Class |
| Nov. 28 | 5.2 - Definite Integrals | p. 390 1-9 odd, 17,21,23,33,47,49 |
| Nov. 30 | 5.3 - Fundamental Theorem | p. 402 3-15 odd, 19,23,25,35,55,59,67 |
| Dec. 2 | Review | |
| Dec. 5 | Exam 4 (§4.4 – §5.3) | |
| Dec. 7 | 5.4 - Indefinite Integrals | p. 411 1,5-9 odd, 19,25,37,45-49 odd, 55,59,61 |
| Dec. 9 | 5.5 - Substitution Rule | p. 420 1-13 odd, 21,23-29 odd, 31,43,51,57,59, 65,75,77 |
| Dec. 12 | Review | |
| Dec. 15 | Final Exam | Thursday 8:30-10:30 |