Math 1190 – Section 2
Calculus I
FALL 2005

**Instructor:** Dr. Sean Ellermeyer, SC 524, (770) 423-6129 (Math dept: (770) 423-6327), email: sellerme@kennesaw.edu, Web Page: http://math.kennesaw.edu/~sellerme

**Time and Location:** Monday, Wednesday, and Friday 9:30 - 10:45 a.m., Clendenin 1007.

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**Textbook:** Calculus, Concepts and Contexts, 3rd ed., James Stewart.

**Course Description:** A first course in calculus and analytic geometry. Topics include fundamental concepts of limits, continuity, derivatives, and integrals of functions of one variable, and applications. (Prerequisite: MATH 1113 (Precalculus))

**Some Expected Learning Outcomes**

1. The student will understand the difference between average rate of change and instantaneous rate of change and be able to illustrate this distinction graphically, numerically, and analytically.
2. The student will know the analytic definition of “derivative” and be able to illustrate this definition in computing certain basic derivatives.
3. The student will be able to compute limits both analytically and numerically.
4. The student will know and be able to use the basic “limit laws”.
5. The student will be able to determine the information about the behavior of various functions using information that is obtained from the first and second derivatives of these functions.
6. The student will know how to analytically compute derivatives of polynomial, exponential, logarithmic and trigonometric functions.
7. The student will become proficient at using the sum, product, quotient, and chain rules of differentiation.
8. The student will know how to compute derivatives of functions defined implicitly.
9. The student will know how to set up and solve related rates problems.
10. The student will know how to set up and solve optimization problems.
11. The student will be able to antidifferentiate certain basic functions.
12. The student will understand the area and distance interpretations of the definite Riemann integral and will be able to compute certain basic integrals using the Fundamental Theorem of Calculus.

**Grading:** There will a total of 10 quizzes on scheduled dates (listed in the course outline). These quizzes, which will be administered using the Beyond Question system (except where noted), will contain short multiple choice or true-false questions. You are required to own (and bring to class on quiz days) a Beyond Question remote control. You are also responsible to have this remote control in working condition. (Have a spare battery on hand.) Since quizzes will often take place right at the beginning of the class period, it is important that you be on time, because it will not be possible to make up the quiz if you miss it. You will also not be able to take the quiz if you forget to bring your remote control.
In addition to the aforementioned quizzes, there will also be four one-hour exams and a comprehensive two-hour final exam. The exam dates are listed in the course outline. Each one-hour exam will contain five or six problems and the final exam will contain ten or twelve problems. Your solutions of each exam problem will be graded according to the following scheme:

- 10 points – if your solution is correct (including a correct “final answer”) and your solution is well written. By “well-written”, I mean that I am able to easily follow your reasoning, no important details are omitted from your solution, correct notation is used, etc. Essentially, you will get 10 points if your solution is correct and I don’t have to struggle in determining that it is correct.
- 8 points – if your solution is correct (including a correct “final answer”) but I have to struggle in determining that it is correct.
- 5 points – if your solution is not correct, but you have made a very good start (that is well-written) and have provided the majority of a correct solution. Essentially, 5 points means high partial credit.
- 2 points – if your solution is not correct, but at least the beginnings of a correct solution are discernible. Essentially, 2 points means low partial credit.
- 0 points – if partial credit is not warranted.

Please note that “correct solution” and “correct final answer” do not mean the same thing! It is absolutely essential, in writing solutions, that you provide sufficient details showing how you arrive at your final answer. I (the reader) must be able to see what your reasoning process is. Thus it is possible, for example, to write down a correct final answer and end up with 0 points (because I can’t tell how you came up with your answer). Also, keep in mind that correct statements that you write can be “cancelled” by incorrect statements that you write. For example, if you write only statement X and statement X is a correct beginning of the solution to the problem, then you might be awarded 2 points. However, if you write statements X and Y where statement X is correct and relevant but statement Y is incorrect or contradicts statement X, then you could be given 0 points.

On quizzes which consist of multiple choice or true-false questions, 10 points will be awarded for correct answers and 2 points will be awarded for incorrect answers. Thus, there is partial credit given simply for being present at the quizzes.

Your grade on each exam will be calculated by averaging your scores on each question and by then multiplying the result by 10. Thus, a perfect score on any exam or quiz is 100. Your final grade at the end of the course will be calculated according to

\[
\frac{\text{Quiz Average Score} + \text{Sum of Hour Exam Scores} + \text{Final Exam Score}}{6}
\]

However, before performing the above calculation, the lowest hour-exam (or quiz average) score will be dropped and replaced with the final exam score (if the final exam score is higher). Thus, the final exam can be used to take the place of your worst test performance (or of your quiz average).

The letter grade that you get at the end of the course will be assigned using the result of the above calculation as follows:

- A - for a score between 80 and 100.
- B - for a score between 60 and 80.
- C - for a score between 40 and 60.
This grading scale will be followed exactly – including rounding up and rounding down of scores that fall between two grade ranges. For example, if your final score is 59.4, then you will get a C, but if your final score is 59.5, then you will get a B.

**Important Note:** There will be no make-up exams for any reason (legitimate or not legitimate)! Occasionally, students miss exams for legitimate reasons such as illness. If you must miss an exam for a legitimate reason, please inform me as soon as possible. If your reason for missing the exam is legitimate, then you will be excused from it and your grade on the portion of the final exam that addresses the material of the missed exam will be used as your grade for the missed exam. In order to be excused from an exam, you must provide written documentation (from a doctor or other authority) that states the reason why you were not able to be at KSU on the day of the exam.

**Grades of “Incomplete”:** Grades of “Incomplete” (I) are given, at the instructor’s discretion, to students who have been doing satisfactory work (at least a C average) up until the last two weeks of the semester but who, for some unavoidable reason, are unable to complete the work of the last two weeks of the semester. (Thus, all work has been completed satisfactorily except for the final exam.) No decisions about grades (including grades of Incomplete) will be made until the semester (including the final exam) is finished. Occasionally, students ask me if I will give them a grade of “Incomplete”. This request is usually made at some point before the last two weeks of the semester. I can’t answer such requests since I do not make any grading decisions until the semester is over. If I see that an "Incomplete" grade is warranted, then I will give that grade (without being asked). I very rarely assign grades of “Incomplete” because I have found that they are usually not warranted. All incomplete work must be made up (and the I grade changed to a regular grade, A, B, C, D, or F) as quickly as possible, typically before the start of the next semester.

**Academic Honesty:** No cheating of any kind will be tolerated. If you are caught cheating in this course, your name will be placed on record in the KSU Judiciary Office. You will also be given a grade of F for the course. More severe penalties such as suspension or expulsion might also ensue. Please read the attached document regarding academic honesty.

**Course Outline**

**August 19:** 2.1 – The Tangent and Velocity Problems

**August 22:** 2.2 – The Limit of a Function at a Point

**August 24:** 2.3 – The Limit Laws

**August 26:** Questions and Quiz 1

**August 29:** 2.4 – Continuity

**August 31:** 2.6 – Tangents, Velocities, and Other Rates of Change

**September 2:** 2.7 – Derivatives

**September 7:** Questions and Quiz 2
September 9: 2.8 – Derivative Functions

September 12: 2.8 – Derivative Functions

September 14: 2.9 – What information about the function \( f \) do the functions \( f' \) and \( f'' \) give to us?

September 16: Questions and Quiz 3

September 19: Exam 1

September 21: 3.1 – Derivatives of Polynomial Functions

September 23: 3.1 – Derivatives of Exponential Functions

September 26: 3.2 – The Product and Quotient Rules

September 28: 3.4 – Derivatives of Trigonometric Functions

September 30: Questions and Quiz 4

October 3: 3.5 – The Chain Rule

October 5: 3.6 – Implicit Differentiation

October 7: 3.7 – Derivatives of Logarithmic Functions

October 10: Questions and Quiz 5

October 12: Exam 2

October 14: 4.1 – Related Rates

October 17: 4.1 – Related Rates

October 19: Questions and Quiz 6 (written – not using Beyond Question)

October 21: 4.2 – Maximum and Minimum Values

October 24: 2.5 – Limits Involving Infinity

October 26: 4.3 – Derivatives and the Shape of Curves

October 28: Questions and Quiz 7

October 31: 4.6 – Optimization Problems

November 2: 4.6 – Optimization Problems

November 4: Questions and Quiz 8 (written – not using Beyond Question)

November 7: Exam 3

November 9: 4.9 – Antiderivatives
November 11: 5.1 – Areas and Distances
November 14: 5.2 – The Definite Integral
November 16: 5.2 – The Definite Integral
November 18: Questions and Quiz 9
November 21: 5.3 – Evaluating Definite Integrals
November 28: 5.4 – The Fundamental Theorem of Calculus
November 30: 5.4 – The Fundamental Theorem of Calculus
December 2: Questions and Quiz 10
December 5: Exam 4
December 7: Review
December 9: Final Exam (9:30–11:30 a.m.)