Math 2202/02 – Calculus II
Spring 2010

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

Time and Location: Section 1: Monday, Wednesday, and Friday, 8:00 a.m. – 9:10 a.m. in CL 1003. Section 2: Monday, Wednesday, and Friday, 9:30 a.m. – 10:40 a.m. in CL 1003.

Office Hours:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Monday</td>
<td>11:00 a.m. - 1:00 p.m.</td>
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<tr>
<td>Wednesday</td>
<td>11:00 a.m. - 1:00 p.m.</td>
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<td>Friday</td>
<td>11:00 a.m. - 12:00 p.m.</td>
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Other Required Materials: TI-83 Graphing Calculator (or equivalent).

Supplemental Instruction: Bindia Mathew, who is a senior mathematics major, will be the supplemental instruction (SI) leader for this course. Bindia will offer frequent help and instruction sessions (times to be announced). You are highly encouraged to participate in as many of Bindia’s SI sessions as possible. Past experience has shown that, as a whole, students who regularly participate in SI sessions earn higher grades than do students who do not attend SI sessions.

Course Description: The main topics of this course will be integral calculus and infinite sequences and series. Emphasis will be placed on applications of the integral, techniques of integration, and functions defined by power series.

Some Expected Learning Outcomes

1. The student will be able to write a clear formal statement of the Fundamental Theorem of Calculus and know how to use this theorem. (This includes both parts of the theorem – differentiation of functions defined by an integral and integration of continuous functions for which antiderivatives can be found).

2. The student will demonstrate understanding of the concept of a family of antiderivatives (also called an indefinite integral).

3. The student will be able to recognize basic integrals that correspond to differentiation formulas (learned in Calculus I).

4. The student will master the integration techniques of simple substitution, integration by parts, and trigonometric substitution.

5. The student will demonstrate an ability to write rational expressions in partial fraction form (partial fraction decomposition).

6. The student will be able to set up definite integrals that give areas of two-dimensional regions and volumes of three-dimensional solids that are obtained by rotating a curve about an axis.

7. The student will gain a basic introductory understanding of differential equations, families of solutions of differential equations, initial value problems, and analytic solution of separable differential equations.

8. The student will be able to apply L’Hopital’s Rule in evaluating certain limits.

9. The student will be able to recognize improper integrals and will be able to evaluate certain improper integrals analytically (as a limit of integrals that are not improper).

10. The student will understand the concepts of convergence and divergence of sequences and series.
11. The student will demonstrate knowledge that the sequence of terms of a convergent series must
tend to zero but that the converse of this fact is not true in general.
12. The student will be able to apply tests such as the Integral Test and the Standard and Limit
Comparison Tests in determining whether certain given series converge or diverge.
13. The student will be able to use the Ratio Test (and any other needed tests) to determine the
interval of convergence of a power series.
14. The student will be able to differentiate and antidifferentiate functions defined by power series
and will demonstrate understanding that these operations may give rise to slightly different intervals
of convergence.
15. The student will be able to derive the Taylor Series of a function (centered at a given point).

Grading: There will be four one-hour exams and a comprehensive two-hour final exam. In addition,
there will be seven short quizzes. The exam and quiz dates are listed in the course outline. Your
solutions to each quiz and exam problem will be graded according to the following scheme:

- 20 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 20 points
if your solution is correct and I don’t have to struggle in determining that it is correct. 20 points is
equivalent to a “high A”.
- 16 points – if your solution is correct (including a correct “final answer”) but I have to
  struggle in determining that it is correct due to unclear writing, incorrect use of notation, or for
  whatever reason. 16 points is equivalent to a “borderline A–B”.
- 10 points – if your solution is not completely correct, but you have made a very good start
  (that is well-written) and have provided the majority of a correct solution. Essentially, 10 points
  means high partial credit and is equivalent to a “mid–level C”.
- 4 points – if your solution is not correct, but at least the beginnings of a correct solution are
discernible. Essentially, 4 points means low partial credit and is equivalent to a “borderline D–F”.
- 0 points – if partial credit is not warranted. 0 points is equivalent to a “low F”.

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 4 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.

Your grade on each exam and quiz will be calculated by averaging your individual question
scores. Thus a perfect score on any exam or quiz is 20. The average grade of the seven quizzes will be
considered as a single grade. Your final grade at the end of the course will be calculated according to

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

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 16 and 20.
- B - for a score between 12 and 15.9.
This grading scale will be followed exactly with all exam scores and the final score calculation rounded to the nearest tenth. For example, suppose that your quiz average is 10.0, your scores on the first four exams are 9.9, 1.6, 14.6, and 5.6, and that your score on the final exam is 6.3. Since the final exam score is 6.3, which is higher than 1.6, the grade of 1.6 would be disregarded and the grade of 6.3 would be counted double. Thus your grade would be calculated as 
\[
\frac{10.0 + 9.9 + 6.3 + 14.6 + 5.6 + 6.3}{6} = 8.78\overline{3}
\] 
which rounds to 8.8. In this case your course grade would be a C.

**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 illnesses and automobile mishaps. 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 (in the case of illness) or from the police (in the case of an auto accident) that states the reason why you were not able to be at KSU on the day of the exam. All such excuses will be verified by me. In some cases in which a student knows ahead of time, and informs me at least one week in advance, that he or she will not be able to be present on an exam day (for a legitimate reason), I allow the student to take the exam early (but not after the official exam day).

**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. 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 (this includes things such as looking at hidden notes or books or looking at somebody else’s exam paper while taking an exam), you will be reported to the KSU Judiciary Office. In addition to your name being on record with the Judiciary, you will also get a grade of zero on the work on which you cheated and might also be given a final grade of F for the course. At the discretion of the Judiciary, more severe penalties such as suspension or expulsion might also ensue. Please read the document regarding academic honesty which can be found on the course Web page.