MA160 Calculus I

Syllabus

Instructor: Adele M. Miller

Brief course description:
Calculus is the study of change and motion. After a quick review of the major types of basic functions, students will explore, analyze, and apply the mathematical concepts of limit, continuity, and derivative. A brief introduction to integration will be included at the end of the semester. We will use the rule of four, studying the subject from graphical, analytical, numerical, and verbal viewpoints.

Requisite:
MA130 or its equivalent

Required Text:

Course Objectives:
1. To help students understand and appreciate the major concepts of differential calculus.
2. To engage students in mathematical reasoning.
3. To develop students’ abilities to approach calculus topics from graphical, numerical symbolic, and verbal points of view.
4. To help students learn to read mathematics and to become independent learners of mathematics.
5. To develop students’ abilities to create mathematical models and use these models to solve problems.
6. To engage students in the solution of problems, especially open-ended problems, which apply the derivative concept.
7. To develop students’ ability to write about mathematical ideas and problem solutions.
8. To help students learn the basic algebraic techniques of differentiation.

Teaching Strategies:
1. Lecture on concepts and technique.
2. Presentation of example and strategies.
3. Reading and writing assignments.
4. Practice and learning through homework assignments.
5. Applications to demonstrate relevance and extend learning.
6. Active student engagement in group work and discussions.
7. Quizzes and tests to encourage and monitor learning.

Homework:
Students are encouraged to complete all homework exercises soon after the section is discussed in class. Questions for the weekly quiz will be based on these exercises. I may collect homework in order to provide constructive feedback and to verify that reasonable progress is being made on the assignments. Students are encouraged to discussed homework questions with me, other students, and the department tutor. Students should rework any exercises that they received help with (even if it’s from me or at the beginning of the class). Given credit to any ideas that came from another individual. A limited amount of time at the beginning of each class will be allocated for discussion of homework exercises.

Quizzes
A quizzes will be given each class unless there is a test scheduled. Quiz questions will focus on current work but will also include material from previous quizzes. The lowest two quiz grades will be dropped and the remaining quizzes averaged together. No make up quizzes will be given.

Computation of Grades
homework exercises from text 10%
homework on handout 10%
quizzes 25%
tests 25%
attendance and class participation 10%
final exam 20%

**Classroom Policies:**
1. Active participation requires attendance and arrival to class in time to be prepared for work when the class period begins.
2. Participation in group discussions is required and accessed for active engagement and contribution.
3. The time spent on this course outside of the class should average six to twelve hours per week. This includes reading the textbook, reviewing class notes, doing assigned work, working on projects, and preparing for tests.
4. All work turned in on tests, quizzes, and individual papers must be entirely your own. Behavior contrary to this will result in a grade of F on the test. On homework, acknowledge any ideas you received from others. You should be aware of and adhere to the college’s policy on plagiarism.
5. You are encouraged to study together outside of the class. The work you turn in should be entirely your own, though. If you receive help in completing homework, make sure you put away any notes, write the answer in your own words, and give credits to your collaborators.
6. Attendance will be taken each class period. You are expected to attend all classes. If you miss class, you are responsible for doing all classroom activities you missed, getting the notes from a classmate, and turning in all work on the day it is due. If possible, notify me in advance any anticipated absence. If you miss more than two classes, you must meet with me to discuss the advisability of remaining in the course for the remainder of the semester.
7. If unforeseen and unavoidable circumstances keep you from attending class on the day of a test, you must contact me immediately to explain the absence and, if approved, schedule a make-up. Documentation of the reason for absence and promptness in arranging a make-up is advised.

**Evaluation Criteria for assignments and quizzes**

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<thead>
<tr>
<th>Pts</th>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>10</td>
<td>A/A+</td>
<td>Excellent work. You appear to have a good understanding of the main concepts and procedures in the assignment. Your answers are thorough, well written, and show insight. Explanations are logical, thorough and precise. Papers are neat and well organized.</td>
</tr>
<tr>
<td>9</td>
<td>B/B+/A-</td>
<td>Above average work. You completed the assignment and appear to have a good understanding of most of the main ideas or concepts. You may have made a few errors, but not many. Explanations show understanding, are logical, and for the most part complete, but may need some editing.</td>
</tr>
<tr>
<td>8</td>
<td>B-/C+</td>
<td>Satisfactory work. You completed most of the assignment and understand some of the main idea, but need work in other areas. Some of the problems may have been started, but unfinished. Work shows some sense of understanding, but you may need to work on style, completeness, logical order, and/or precision. Graph may lack clarity. Look over the areas where you had trouble and seek help from the instructor. You may need to be more thoughtful in your work.</td>
</tr>
<tr>
<td>7</td>
<td>C/D</td>
<td>Although you made a good attempt at the assignment, your work shows a lack of understanding, sloppiness or carelessness, or inattention to detail. You may need to include more reasons or steps in your answers. Your work is sketchy, disorganized, or lacking insight. If you had trouble on the assignment, seek help from the instructor. You may have misread the directions for the assignment. Difficult problems may have been not attempted, incomplete, or showed a lack of understanding and direction.</td>
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<tr>
<td>5 or below</td>
<td>F</td>
<td>Incomplete or poor work. You did not complete most of the assignment. The work that was not well done. You need to include more than just answers in your solutions. If you need help started, please ask!</td>
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No enough was done on the assignment to get credit. Perhaps no paper was submitted or what was submitted was illegible.

This pertains to homework only. Redo for credit. You had real difficulties on this assignment and I feel that you would learn a lot from redoing the assignment within two class meeting. Get help with the material!

**Mathematics is not a spectator sport.** Just as one doesn't become a great athlete by watching games, one can't develop the skill of mathematics by watching the teacher. Give each problem a try! Take a break and come back to work at it some more. With practice will come understanding. You will be amazed at what you can accomplish! Be sure to come see me whenever you need a little coaching or pep talk. I'm here for you.

**Bibliography:**
You may wish to reference other calculus texts to see more examples of problems worked out. Many are kept in the conference room in upstairs Regis Hall. A copy of the students solutions manual for our text is also available for use in the conference room. Do not remove the books from the conference room so that other students will have access to them.


N.B. You are responsible for understanding and complying with the contents of this syllabus. If you have any questions about this syllabus please raise them at the beginning of the semester.

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