Course Overview

This course introduces students to the concepts of the derivative and its applications, the indefinite integral, the definite integral and their applications. Proofs and derivations of basic ideas will be presented but the emphasis of the course is on understanding and application. This course is intended for B.S. Mathematics majors, B.S. Biology, chemistry, and physics majors and minors, B.A. Mathematics majors and concentrates (including specializations in actuarial science, operations research, and statistics), and B.A. Chemistry, earth science, natural science, and physics majors and concentrates.

Please note: If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please notify me as soon as possible.

Calculator Use: The recommended calculator for this course is the TI-84+. Similar calculators such as the TI-83, TI-83+, TI-84, and TI-86 are also acceptable and may be used for the calculator active section of each examination. Calculators with a symbolic capability such as the TI-89 and TI-92 are not allowed on examinations at all. Telephone calculators are not permitted in class or on examinations. If you are wondering whether your calculator is acceptable, please ask.

Cell phones and other communication devices: Must be turned off and put away at all times during class. No texting allowed in class.

University Policies:
1. You must take the final cumulative examination at the time specified in the course selection book: **Wednesday, May 11, 2 pm – 4 pm**.
2. If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My telephone numbers and office hours are given above. I will need a copy of the accommodation letter from Student Disability Services in order to arrange your class accommodations. Contact Student Disability Services, room 101, Emma Willard Hall, if you are not already registered with them. Student Disability Services maintains the confidential documentation of your disability and assists you in coordinating reasonable accommodations with your faculty.
3. All students are expected to demonstrate integrity in the completion of their coursework. Academic integrity means doing one's own work and giving proper credit to the work and ideas of others. It is the responsibility of each student to become familiar with what constitutes academic dishonesty and plagiarism and to avoid all forms of cheating and plagiarism. Students who engage in plagiarism and other forms of academic misconduct will face academic and possibly disciplinary consequences. Academic sanctions can range from a reduced grade for the assignment to a failing grade for the course. From a disciplinary standpoint, an Academic Misconduct Report may be filed and a Faculty Hearing Board may impose sanctions such as probation, suspension or expulsion. For further information on academic misconduct and its consequences, please consult the Student Code of Conduct (http://www.ccsu.edu/StudentConduct) and the Academic Misconduct Policy (http://www.ccsu.edu/AcademicIntegrity). This policy is rigorously enforced by the Department of Mathematical Sciences.

Class Schedule*

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Sections</th>
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<tbody>
<tr>
<td>Jan 20</td>
<td>Overview of Course Outline</td>
<td>Section 2.2: 2, 4, 12, 16, 18, 24-50 even</td>
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<tr>
<td></td>
<td>Limits</td>
<td>Note: Problems listed should be prepared with care to hand in at the beginning of the next class after it is assigned. (Homework will NOT be accepted after the due date.) The remaining problems in each section are further suggested problems for you to complete but not to hand in. Material covered in all problems will be included on examinations.</td>
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<tr>
<td>Jan 25</td>
<td>One Sided Limits</td>
<td>Section 2.4: 2-14 even, 28-30 even</td>
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<td>Jan 27</td>
<td>Continuity and Infinite Limits</td>
<td>Section 2.5: 14-34 even, 44, 46</td>
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<td>Section 2.6: 10-24 even, 30-50 even</td>
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<td>Feb 1</td>
<td>Tangents lines</td>
<td>Section 3.1: 6, 8, 12, 16, 24</td>
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<td>Feb 3</td>
<td>Derivatives of a Function</td>
<td>Section 3.2: 2, 20, 22, 24, 26, 38, 40, 44, 46, 48</td>
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<td>Intuitive Derivatives of trig functions</td>
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<td>Feb 8</td>
<td>Differentiation Rules</td>
<td>Section 3.3: 2, 4, 8, 10, 14, 18, 24, 34, 36</td>
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<td>Feb 10</td>
<td>Derivatives of Trig Functions</td>
<td>Section 3.5: 2-6 even</td>
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<td>Chain Rule</td>
<td>Section 3.6: 10-18 even, 26-30 even</td>
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<td>Feb 17</td>
<td>Q&amp;A</td>
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<td>Feb 22</td>
<td>Exam #1</td>
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<td>Feb 24</td>
<td>Implicit Differentiation</td>
<td>Section 3.7: 2, 6, 12, 18, 22, 26, 32, 36</td>
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<td>Feb 29</td>
<td>Derivatives Exponential and Logarithm Functions</td>
<td>Section 3.3: 30, 32, 40</td>
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<td>Section 3.6: 20, 22, 36</td>
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<td>Section 3.8: 14, 16, 18, 24, 26, 62, 68, 74</td>
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<td>Mar 2</td>
<td>Related Rates</td>
<td>Section 3.10: 4-12 even, 20, 22, 28</td>
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<tr>
<td>Mar 7</td>
<td>Maxima and Minima</td>
<td>Section 4.1: 24–32 even, 38, 40, 46-60 even</td>
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Mar 9  Q&A

Mar 14  Exam #2

Mar 16  Mean Value Theorem, Monotonic Functions
        Section 4.2: 4-16 even
        Section 4.3: 4, 10, 14, 42, 44

Mar 28  Graphing Functions
        Section 4.4: 14, 16, 24, 26, 28, 30, 40, 82

Mar 30  Indeterminate Forms
        L’Hôpital’s Rule
        Section 4.5: 8-26 even, 34, 36, 52-58 even

Apr 4   Optimization
        Section 4.6: 4, 8, 10, 12, 18, 22, 24, 26

Apr 6   Newton’s Method
        Section 4.7: 2-8 even, 12, 34, 36, 52-58 even

Apr 11  Anti-derivatives
        Section 4.8: 26-52 even, 58-68 even, 94-98 even

Apr 13  Q&A

April 18 Exam #3

April 20 Estimating Area
        Sigma Notation
        Section 5.1: 2-12 even
        Section 5.2: 4, 18, 22, 36

Apr 25  Definite Integral
        Average Value
        Section 5.3: 10-16 even, 20, 56, 60

Apr 27  Fundamental Th of Calculus
        Section 5.4: 2-22 even, 30, 34, 40, 42, 46

May 2   Indefinite Integrals
        with Substitution
        Section 5.5: 4, 8, 12, 18-54 every other even, 56

May 4   Definite Integral
        Area Under a Curve
        Section 5.1: 20, 26, 30, 34, 40, 46-58 even

May 11  FINAL EXAMINATION 2:00 PM – 4:00 PM

Grading:

Examinations: 45% (15% each)
Class attendance and participation 15%
Homework 20%
Final Exam 20%

- When unforeseen circumstances arise, it may be necessary to alter this schedule.