NJIT Academic Integrity Code: All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: An introduction to differential and integral calculus of a single variable. Effective From: Fall 2013.

Number of Credits: 3

Prerequisites: (Intended for students who are not in Science or in Engineering) Math 107 with a grade of C or better, or Math 108 with a grade of C or better or NJIT placement.

Course-Section and Instructors

<table>
<thead>
<tr>
<th>Course-Section</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 138-001</td>
<td>Professor S. Mohebbi</td>
</tr>
<tr>
<td>Math 138-003</td>
<td>Professor R. Brown</td>
</tr>
<tr>
<td>Math 138-005</td>
<td>Professor R. Brown</td>
</tr>
<tr>
<td>Math 138-101</td>
<td>Professor F. Jamedar</td>
</tr>
</tbody>
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Required Textbook:

<table>
<thead>
<tr>
<th>Title</th>
<th>Calculus: Concepts and Contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>Stewart</td>
</tr>
<tr>
<td>Edition</td>
<td>4th</td>
</tr>
<tr>
<td>Publisher</td>
<td>Cengage Learning</td>
</tr>
</tbody>
</table>
University-wide Withdrawal Date: Please note that the last day to withdraw with a W is November 3, 2014. It will be strictly enforced.

**POLICIES**

**DMS Course Policies:** All DMS students must familiarize themselves with, and adhere to, the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. DMS takes these policies very seriously and enforces them strictly.

**Grading Policy:** The final grade in this course will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Exam I</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm Exam II</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
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</table>

Your final letter grade will be based on the following tentative curve. NOTE: This course needs to be passed with a grade of C or better in order to proceed to Math 238 or Math 246.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90 - 100</td>
</tr>
<tr>
<td>B+</td>
<td>85 - 89</td>
</tr>
<tr>
<td>B</td>
<td>80 - 84</td>
</tr>
<tr>
<td>C</td>
<td>70 - 74</td>
</tr>
<tr>
<td>C+</td>
<td>75 - 79</td>
</tr>
<tr>
<td>D</td>
<td>60 - 69</td>
</tr>
<tr>
<td>F</td>
<td>0 - 59</td>
</tr>
</tbody>
</table>

**Attendance Policy:** Attendance at all classes will be recorded and is mandatory. Please make sure you read and fully understand the Math Department’s Attendance Policy. This policy will be strictly enforced.

**Homework:**

**Quiz Policy:**

**Exams:** There will be two midterm exams held in class during the semester and one comprehensive final exam. Exams are held on the following days:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>TBA</td>
</tr>
</tbody>
</table>

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the Math Department’s Examination Policy. This policy will be strictly enforced.
Makeup Exam Policy: There will be NO MAKE-UP EXAMS during the semester. In the event the Final Exam is not taken, under rare circumstances where the student has a legitimate reason for missing the final exam, a makeup exam will be administered by the math department. In any case the student must notify the Math Department Office and the Instructor that the exam will be missed and present written verifiable proof of the reason for missing the exam, e.g., a doctors note, police report, court notice, etc., clearly stating the date AND time of the mitigating problem.

ADDITIONAL RESOURCES

Further Assistance: For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed at the Math Department link. Teaching Assistants are also available in the Math Learning Center.

All students must familiarize themselves with and adhere to the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. The Department of Mathematical Sciences takes these policies very seriously and enforces them strictly.

Important Dates (See: Fall 2014 Academic Calendar, Registrar)

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2, 2014</td>
<td>T</td>
<td>First Day of Classes</td>
</tr>
<tr>
<td>September 8, 2014</td>
<td>M</td>
<td>End of Add/Drop Period</td>
</tr>
<tr>
<td>November 3, 2014</td>
<td>M</td>
<td>Last Day to Withdraw</td>
</tr>
<tr>
<td>November 25, 2014</td>
<td>T</td>
<td>Thursday Classes Meet</td>
</tr>
<tr>
<td>November 26, 2014</td>
<td>W</td>
<td>Friday Classes Meet</td>
</tr>
<tr>
<td>November 27 - 30, 2014</td>
<td>R - S</td>
<td>Thanksgiving Recess Starts</td>
</tr>
<tr>
<td>December 10, 2014</td>
<td>W</td>
<td>Last Day of Classes</td>
</tr>
<tr>
<td>December 11 &amp; 12, 2014</td>
<td>R &amp; F</td>
<td>Reading Days</td>
</tr>
<tr>
<td>December 15 - 20, 2014</td>
<td>M - S</td>
<td>Final Exam Period</td>
</tr>
</tbody>
</table>

Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Section</th>
<th>Title</th>
<th>Homework</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1.1</td>
<td>Four Ways to Represent a Function</td>
<td>ex. 5 – 8, 29 – 33</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>A Catalog of Essential Functions</td>
<td>ex. 1, 2</td>
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<tr>
<td></td>
<td>1.3</td>
<td>New Functions from Old Functions</td>
<td>ex. 1, 2, 3</td>
</tr>
<tr>
<td>Chapter</td>
<td>Section</td>
<td>Topic</td>
<td>Exercises</td>
</tr>
<tr>
<td>---------</td>
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<tr>
<td>2</td>
<td>2.1</td>
<td>The Tangent and Velocity Problems</td>
<td>ex. 5, 6, 7</td>
</tr>
<tr>
<td></td>
<td>2.2</td>
<td>The Limit of a Function</td>
<td>ex. 3, 4, 5, 6, 13, 14, 15, 16</td>
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<tr>
<td>3</td>
<td>2.3</td>
<td>Calculating Limits Using the Limit Laws</td>
<td>ex. 1, 2, 9 – 24</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>Limits Involving Infinity</td>
<td>ex. 3, 4, 5, 7, 15, 16, 17, 19, 20, 22, 23, 24</td>
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<tr>
<td></td>
<td>2.6</td>
<td>Derivatives and Rates of Change</td>
<td>ex. 5, 7, 9ab, 13, 15, 43ab, 45, 47</td>
</tr>
<tr>
<td>4</td>
<td>2.7</td>
<td>The Derivative as a Function</td>
<td>ex. 3, 4, 5, 6, 14, 15, 16</td>
</tr>
<tr>
<td></td>
<td>3.1</td>
<td>Derivatives of Polynomials and Exponential Functions</td>
<td>ex. 3 – 28, 45, 49, 50,</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Review for Exam 1</td>
<td></td>
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<tr>
<td></td>
<td>EXAM 1</td>
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<td></td>
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<td>7</td>
<td>3.2</td>
<td>The Product and Quotient Rules</td>
<td>ex. 3 – 15, 29, 30, 33a, 35a, 39,</td>
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<td>3.3</td>
<td>Derivatives of Trigonometric Functions</td>
<td>ex. 1 – 14, 19 – 22, 23a, 25a, 27, 28, 31</td>
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<td>8</td>
<td>3.4</td>
<td>Chain Rule</td>
<td>ex. 7 – 30, 37, 38</td>
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<td>3.5</td>
<td>Implicit Differentiation</td>
<td>ex. 3 – 16, 21 – 28</td>
</tr>
<tr>
<td>9</td>
<td>3.7</td>
<td>Derivatives of Logarithmic Functions</td>
<td>ex. 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14</td>
</tr>
<tr>
<td></td>
<td>3.8</td>
<td>Rates of Change in the Natural and Social Sciences</td>
<td>ex. 1, 4, 7, 8, 9, 10, 11a, 12a, 13ab, 14, 15, 16ab</td>
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<tr>
<td>10</td>
<td>4.1</td>
<td>Related Rates</td>
<td>ex. 2 – 23 odd</td>
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<tr>
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<td></td>
<td>Review for exam 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXAM 2</td>
<td></td>
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<tr>
<td>12</td>
<td>4.2</td>
<td>Minimum and Maximum Values</td>
<td>ex. 3, 5, 23, 25, 27, 29, 41 – 51 odd</td>
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<tr>
<td></td>
<td>4.3</td>
<td>Derivatives and Shapes of Curves</td>
<td>Ex. 7 – 16, 21 – 26</td>
</tr>
<tr>
<td>13</td>
<td>4.6</td>
<td>Optimization Problems</td>
<td>Ex. 5, 6, 9 – 12, 14, 15, 18, 23, 40</td>
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<tr>
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<td>4.8</td>
<td>Antiderivatives</td>
<td>ex. 1 – 16, 19 – 26</td>
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<tr>
<td>14</td>
<td>5.1</td>
<td>Definite Integral</td>
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<tr>
<td>15</td>
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<td>Review for final exam</td>
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</table>