Math 2253 - Spring 2014
Calculus I

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MEETING TIMES/LOCATION: MTuThF 10:00-10:50 S003/D234
MTuThF 11:00-11:50 S005/D234

COURSE DESCRIPTION: A first course in calculus. Topics include limits, derivatives explored in various contexts and applications of differentiation (maximum and minimum problems, curve sketching, and optimization problems), integration techniques and applications of integration (area, volume, work, average value, arc length, surface area, volume and work). Other topics may be included at the discretion of the instructor.

GOALS: Upon completing this course students should be able to:

- Find limits of functions and determine continuity of functions.
- Find derivatives of algebraic and some trigonometric functions, and use derivatives to solve applied problems.
- Find integrals of some algebraic and trigonometric functions, and use integrals to solve applied problems

OFFICE HOURS: MTuWThF 8:10 – 9:00 a.m., or by appointment.

PREREQUISITE: A grade of C or higher in MATH 1113 or placement by the Mathematics Assessment Test.

CLASS ATTENDANCE: I strongly suggest the attendance to class. If you miss a class, it is your responsibility to find out what has been taught in that lesson and to learn this material. Active participation is necessary if you wish to do well in this course.

HOMEWORK: For each section, there will be a minimum number of problems, which I strongly suggest to be done by the next class meeting. Homework problems will not be graded, but the quizzes and exams will closely reflect them. Do not forget: the only way TO LEARN math is TO DO math.

COURSE POLICY: There will four in-class tests tentatively scheduled for January 31st, March 14th, March 28th and April 14th respectively (the lowest test grade will be dropped). The final exam is cumulative, and the date TBA.

There will be NO MAKE-UP quizzes, exams. Should there be a special circumstance giving you a valid reason for a makeup exam, let me know in advance of this situation by sending me an email (npascu@spsu.edu) BEFORE the exam takes place.

CALCULATOR: TI-84 is required for this course. It is the only calculator allowed for tests. Evaluation: Input into semester grades will be as follows:
- 20% Exam 1,
- 20% Exam 2
- 20% Exam 3
- 25% Final Exam
- 15% other activities: quizzes, projects, selected HW problems.

The scale for converting your score to letter grades is the usual one (90% or more is an A, 80-89% is a B, 70-79% is a C, 60 - 69% is a D, below 60% is a F).

**Expectations**: I expect you to read the textbook (solved examples, especially). Most likely they will contain the information you need in order to be able to solve your homework exercises.

The only way to get through this course is to work constantly. This includes doing your homework exercises and going over the notes, handouts and textbook. The only way to know math is to practice. This is the only “secret”.

**Resources**: There will be handouts explaining the material covered, solved problems sheets (which reflect as close as possible the homework problems and some others which I considered to be important you to know), review sessions (if required). Help Sessions are available in the SPSU Tutoring Center (The ATTIC, Building A - Student Center) -- for more information, contact Jon Lindsay, Instructor/Academic Advisor (678)915-3051/3053.

**Important Dates**: MLK Holiday January 20th / Spring Break March 3rd – March 7th / The last day to withdraw from class with a grade of “W” is February 25th / Last day of classes April 28th.

**Students with Disabilities**: Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the counselor working with disabilities at (678) 915-7226 from the ATTIC office (http://www.spsu.edu/ATTIC/) as soon as possible to better ensure that such accommodations are implemented in a timely fashion.

**Honesty**: Be sure you read the relevant section and know and understand the potential penalties in the University Academic Regulations in the current undergraduate catalog or on the campus web site.

Copying work done by others, either in-class or out of class, is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy (please see the University Honor Code http://spsu.edu/honorcode/).

**Note**: The pace may vary, so the following is a weekly rather than daily outline.

**MATH 2253 CALCULUS I**

**Course Outline**

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<tr>
<th>WEEK</th>
<th>SECTIONS/TOPICS</th>
<th>SAMPLE HOMEWORK ASSIGNMENTS</th>
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<td>Jan 6th – Jan 10th</td>
<td>1.4: The Tangent and Velocity Problems  1.5: The Limit of a Function</td>
<td>pp. 48: 1, 3, 4, 5, 6, 7, 9  pp. 59: 1, 3, 5, 7, 9, 11, 13, 17, 19, 29, 31, 32, 35, 39</td>
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<td>Jan 13th – Jan 17th</td>
<td>1.6: Calculating Limits Using the Limit Laws 1.8: Continuity</td>
<td>pp. 69: 1, 6, 7, 9, 10, 11, 15, 17, 21, 27, 41, 51, 53, 60  pp. 91: 1, 3, 7, 9, 13, 15, 19, 23, 27, 33, 34, 35, 42, 43, 46, 51, 53</td>
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| Jan 27th – Jan 31st | 2.3: Differentiation Formulas  
2.4: Derivatives of Trigonometric Functions  
Exam 1 | pp. 136: 5, 7, 9, 11, 14, 15, 17, 23, 25, 27, 28, 29, 34, 35, 51, 58, 59, 62, 64  
pp. 146: 3, 5, 7, 9, 13, 15, 17, 18, 22, 23, 26, 30, 35, 39, 42, 45, 46 |
| Feb 3rd – Feb 7th | 2.5: The Chain Rule  
2.6: Implicit Differentiation | pp. 155: 7, 9, 13, 15, 19, 22, 25, 34, 47, 48, 49, 52, 53, 68, 77  
pp. 161: 6, 9, 12, 14, 16, 20, 22, 28, 34, 53, 56, 59 |
| Feb 10th – Feb 14th | 2.7: Rates of Change in the Natural and Social Sciences  
2.8: Related Rates | pp. 155: 7, 9, 13, 15, 19, 22, 25, 34, 47, 48, 49, 52, 53, 68, 77  
pp. 161: 6, 9, 12, 14, 16, 20, 22, 28, 34, 53, 56, 59 |
| Feb 17th – Feb 21st | 3.1: Maximum and Minimum Values  
3.2: The Mean Value Theorem | pp. 205: 1, 3, 5, 9, 12, 17, 22, 25, 28, 32, 35, 38, 45, 49, 51, 54, 55, 65  
pp. 213: 3, 4, 6, 10, 14, 16, 20, 22, 24, 29, 31 |
| Feb 24th – Feb 28th | 3.3: How Derivatives Affect the Shape of a Graph  
3.4: Limits at Infinity; Horizontal Asymptotes | pp. 220: 1, 3, 7, 8, 9, 12, 13, 15, 17, 29, 35, 37, 38, 39, 58, 60, 68, 70  
pp. 235: 1, 3, 5, 9, 13, 14, 17, 19, 23, 25, 26, 29, 34, 35, 37, 42, 45, 49, 51, 53, 57 |
| Mar 3rd – Mar 7th | Spring Break | |
| Mar 10th – Mar 14th | 3.5: Summary of Curve Sketching  
3.6: Graphing with Calculus and Calculators  
Exam 2 | pp. 243: 1, 5, 11, 12, 15, 19, 20, 23, 29, 30, 34, 35, 36, 46, 47, 52, 55  
pp. 249: 1, 5, 6, 7, 9, 20 |
| Mar 17th – Mar 21st | 3.7: Optimization Problems  
3.9: Antiderivatives  
4.1: Areas and Distances | pp. 256: 3, 6, 7, 9, 16, 21, 24, 29, 33, 35, 38, 39, 47, 48, 64, 69  
pp. 273: 3, 5, 13, 15, 19, 21, 23, 25, 27, 29, 39, 43, 51, 53, 57, 63  
pp. 293: 1, 3, 5, 7, 8, 15, 17, 19, 24 |
| Mar 24th – Mar 28th | 4.2: The Definite Integral  
4.3: The Fundamental Theorem of Calculus  
Exam 3 | pp. 307: 1, 5, 8, 9, 18, 22, 28, 33, 35, 37, 42, 43, 47, 55, 57, 62  
pp. 318: 3, 9, 11, 17, 21, 28, 35, 42, 45, 47, 49, 54, 61 |
| Mar 31st – Apr 4th | 4.4: Indefinite Integrals and the Net Change Theorem  
4.5: The Substitution Rule | pp. 327: 5, 9, 11, 15, 17, 22, 26, 34, 35, 40, 45, 47, 52, 57, 69  
pp. 335: 3, 5, 11, 13, 16, 17, 21, 22, 23, 24, 30, 31, 39, 47, 49, 53, 56, 59, 62, 64, 76 |
| Apr 7th – Apr 11th | 5.1: Areas Between Curves  
5.2: Volumes | pp. 349: 1, 3, 5, 9, 11, 12, 13, 17, 18, 19, 24, 27, 32, 35, 36, 46, 56  
pp. 361: 1, 5, 7, 9, 11, 13, 14, 15, 25, 28, 29, 36, 38, 40 |
| Apr 14th – Apr 18th | 5.3: Volumes by Cylindrical Shells  
Exam 4  
5.4: Work | pp. 366: 1, 5, 7, 9, 12, 13, 15, 17, 21, 22, 37, 38, 45, 47 |
| Apr 21st – Apr 25th | 5.5: Average Value of a Function  
Review for final examination | pp. 375: 1, 7, 9, 11, 12, 13, 17, 19, 24 |