

**Instructor:** David Sacco, MSCS 412

**Office:** MSCS 412

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**Office Hours:** T 10:00-11:30 AM, W: 1:00-2:30 PM MSLC: Th: 1:00-2:30 PM

**Textbook:** Technical Calculus with Analytic Geometry, Peter Kuhfittig, 5th edition

**Course Description:** Welcome to Calculus I! In this class we'll be mostly covering tools used in the application of differential and integral calculus. As apposed to a more traditional class, we will be looking at a variety of topics and applications of those topics in a very non-rigorous manner. In this class, we'll be introducing the two branches(differential and integral) with some application, and then in Calculus II you would look at some more advanced topics. Differential calculus is about how one can quantify instantaneous rate of change. Imagine your car moving along the highway and being able to tell how fast it is going without taking averages. Integral Calculus is about finding the total change in a quantity. With this, we can do things like find the area under the curve, or calculate the total mass of an object given its density.

In this book, we'll be studying topics on coordinate geometry in the first chapter. After that, there are 2 chapters on differential calculus and two chapters on integral calculus.

**Grade Policy:**

Homework 21 %

Midterm 1: 18 %

Midterm 2: 18 %

Midterm 3: 18 %

Final: 25 %

I will use a standard grading scheme, anything higher than a 90 is an A, higher than a 80 is a B, higher than a 70 is a C, higher than a 60 is a D, 60 and lower is an F. I will use discretion on close cases.

**Homework and Late Homework Policy:** Homework will be assigned accordingly to the course schedule found at the last page of the syllabus. They'll be due on Friday's. Late homework in general will not be accepted unless a good enough reason with documentation is provided.(E.G. Saying that you were sick and couldn't turn it in would require a doctor's note.). I will be dropping the three lowest homeworks.

**Homework Format:** Every homework assignment will be assigned a score out of 100, based on completeness and accuracy of your mathematical writing. Your homework should be easy to read with well-spaced handwriting. I will not accept papers that aren't stapled, so do that BEFORE coming to class. Be sure to include a large enough space between problems so that it clearly indicates where a new problem begins, and avoid cramming.

**The midterm clause** Any student who wishes to turn in midterm corrections with their next homework will recover up to 50% of the points lost on their exam. This is highly encouraged, as getting a low D could potentially be turned into a B-. I will allow you to use any resources you want to correct your exam, but I will be grading them slightly harder.

**Academic Honesty:** While it is very human and helpful to share information with others, there is a fine line between being helpful and cheating/plagiarism. Information on the university's policy on this can be found at <http://academicaffairs.okstate.edu/>.

**Extra Help:** Do not hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course. I make this time open for you and I encourage you to use them. Do not hesitate to also get in study groups with your peers, as it can be one of the most helpful types of studying. A lot of students in the past have commented that coming to office hours greatly helped them succeed in the class. I don't bite! I also strongly encourage you to make use of the MSLC in the fifth floor of the library. You can go there and casually sit down to do your homework while also getting any questions you have answered by the tutors walking around.

**Students with disabilities:** If you require special accommodation in the course, it is your responsibility to contact me privately as early in the semester as possible.

**Assigned Homework Problems:**

Homework 1: 1.1.2, 1.1.10, 1.1.14; 1.2.8, 1.2.28; 1.3.2, 1.3.12, 1.3.22, 1.3.26, 1.3.32

Homework 2: 1.4.2, 1.4.12, 1.4.22, 1.4.24; 1.7.4, 1.7.8, 1.7.12, 1.7.16

Homework 3: 1.8.2, 1.8.6, 1.8.16, 1.8.22; 1.9.4, 1.9.8, 1.9.22, 1.9.26; 1.10.6, 1.10.10, 1.10.14, 1.10.20

Homework 4: 2.1.28, 2.1.38; 2.2.2, 2.2.4, 2.2.8, 2.2.26, 2.2.28

Homework 5: 2.4.4, 2.4.12, 2.4.16, 2.5.6, 2.5.14, 2.5.16, 2.5.24

Homework 6: 2.6.2, 2.6.9, 2.6.12, 2.6.28; 2.7.2, 2.7.4, 2.7.6, 2.7.10, 2.7.14, 2.7.16, 2.7.32, 2.7.38

Homework 7: 2.8.5, 2.8.9, 2.8.17, 2.8.31; 2.9.2, 2.9.4, 2.9.8; 3.1.4, 3.1.12, 3.1.20

Homework 8: 3.2.4, 3.2.6, 3.2.18, 3.2.31, 3.2.38; 3.4.4, 3.4.7, 3.4.10, 3.4.18, 3.4.30

Homework 9: 3.5.9, 3.5.15, 3.5.19, 3.5.23, 3.5.35; 3.6.2, 3.6.9, 3.6.19

Homework 10: 4.1.2, 4.1.4, 4.1.10, 4.1.12, 4.1.14; 4.3.2, 4.3.4, 4.3.6, 4.3.8, 4.3.10

Homework 11: 4.5.2, 4.5.8, 4.5.10, 4.5.12, 4.5.24, 4.5.36, 4.5.44, 4.5.53

Homework 12: 4.6.8, 4.6.14, 4.6.20, 4.6.22, 4.6.36; 4.7.1, 4.7.10, 4.7.20, 4.7.28

Homework 13: 4.8.2, 4.8.6; 4.9.4, 4.9.6, 4.9.10, 4.9.16

EC Homework 14: 5.1.4, 5.1.6; 5.2.2, 5.2.6, 5.2.10, 5.2.14

**Final:**

The final date for this class is Monday, May 4 from 8:00-9:50 AM

Week	Date	Section - Topic	Week	Date	Section - Topic
1	Jan 12	Course Introduction 1.1 The Cartesian Coordinate System	5	Feb 9	2.4 The Derivative by 4-Step Process
	Jan 14	1.2 The Slope 1.3 The Straight Line		Feb 11	2.5 Derivatives of Polynomials
	Jan 16	1.3 Continued 1.4 Curve Sketching		Feb 13	2.6 Instantaneous Rate of Change
<b>HW1: 1.1, 1.2, 1.3</b>			<b>HW5: 2.4, 2.5</b>		
2	Jan 19	No Class	6	Feb 16	2.7 Differentiation Formulas
	Jan 21	1.6 Conics 1.7 The Circle		Feb 18	2.7 Continued
	Jan 23	1.8 The Parabola 1.9 The Ellipse		Feb 20	2.8 Implicit Differentiation
<b>HW2: 1.4, 1.7</b>			<b>HW6: 2.6, 2.7</b>		
3	Jan 26	1.9 Continued 1.10 The Hyperbola	7	Feb 23	2.9 Higher Derivatives
	Jan 28	2.1 Functions and Intervals		Feb 25	3.1 The First Derivative Test
	Jan 30	2.2 Limits		Feb 27	3.2 The Second Derivative Test
<b>HW3 1.8, 1.9, 1.10</b>			<b>HW7: 2.8, 2.9, 3.1</b>		
4	Feb 2	2.3 The Derivative	8	Mar 2	3.4 Applications of Extrema
	Feb 4	Catch up and Review		Mar 4	Catch up and Review
	Feb 6	<b>Exam 1: 1.1-1.4, 1.6-1.10, 2.1-2.3</b>		Mar 6	<b>Exam 2: 2.1-2.9, 3.1, 3.2, 3.4</b>
<b>HW4: 2.1, 2.2</b>			<b>HW8: 3.2, 3.4</b>		

Week	Date	Section - Topic	Week	Date	Section - Topic
9	Mar 9	3.5 Related Rates	13	Apr 13	4.9 Numerical Integration
	Mar 11	3.6 Differentials		Apr 15	Catch up and Review
	Mar 13	4.1 Antiderivatives		Apr 17	Exam 3: 3.4-3.6, 4.1-4.9
<b>HW9: 3.5, 3.6</b>			<b>HW13: 4.8, 4.9</b>		
10	Mar 23	4.2 The Area Problem	14	Apr 20	5.1 Means and Root Mean Squares
	Mar 25	4.3 Fundamental Theorem of Calculus		Apr 22	5.2 Volumes of Revolution I
	Mar 27	4.4 The Integral		Apr 24	5.3 Volumes of Revolution II
<b>HW10: 4.1, 4.2, 4.3</b>			<b>EC HW14: 5.1, 5.2</b>		
11	Mar 30	4.5 Basic Integration Formulas	15	Apr 27	5.4 Centroids
	Apr 1	4.5 Continued		Apr 29	Catch up and Review for Final
	Apr 3	4.6 Area Between Curves		May 1	Review for Final
<b>HW11: 4.5</b>					
12	Apr 6	4.6 Continued			
	Apr 8	4.7 Improper Integrals			
	Apr 10	4.8 The Constant of Integration			
<b>HW12: 4.6, 4.7</b>					