

MATH 2144, Calculus I, Syllabus

Section 017: 8:00-9:15 AM, MWF, MSCS 514

Instructor: Dr. Jim Choike, Professor of Mathematics

Office: MSCS 416

Phone: 744-5783

Email: choike@math.okstate.edu

Office Hours: By appointment

Prerequisites: A satisfactory score (minimum 70) on the ALEKS placement exam, or a grade of C or better in a college-level course in Trigonometry or Pre-Calculus

Required Materials: (1) Textbook: Calculus: Early Transcendentals, 2nd edition, by Jon Rogawski, and (2) Online homework system WebAssign (<http://www.webassign.net>)

Cell phones: Cell phones MUST be turned off and OUT-OF-VIEW during class. Cell phones cannot be used during class for any purpose; this includes, but is not restricted to, making or receiving phone calls, sending or receiving text messages, taking photographs during class, or using a cell phone for calculations.

Goals and expectations for the course:

- Calculus deals with functions, mathematical objects that relate two varying quantities, and the rules that govern the rates at which one of these quantities changes or accumulates with respect to the other. Our goal in this course is to ensure that you understand the concepts and tools of Calculus, that you master the skills required to use those tools, and that you will be able to apply those ideas to solve problems in many disciplines.
- Thinking and reasoning with mathematics
- Written and oral explanations
- Rule of Four: representing mathematics algebraically, graphically, numerically, and verbally
- Learning how to learn mathematics:
 - Reading the text;
 - Taking notes to highlight things that are important and things that you want to make sure to remember;
 - Learning from your mistakes;
 - Practicing, i.e., doing homework: Sophocles (497 – 406 BCE) captured the value of “practice” in mathematics when he said “One learns by doing the thing; for though you think you know it, you have no certainty until you try”;
 - Asking questions;
 - Learning from and with peers.

Graphing Calculator Usage: Graphing calculators can be a valuable tool for investigating, learning, and applying the ideas of calculus throughout the sciences and engineering. However, facility with calculator usage is not a substitute for your own conceptual understanding or procedural skill. In this course, graphing calculator usage will be permitted on exams as long as your calculator does not have wireless or Internet capability, a QWERTY keyboard, or a camera. If you do not own an acceptable graphing calculator, you may borrow one from the Math Department office without charge, starting Tuesday, August 21. Exams in this course will consist of free response questions that will require you to show all steps in your solutions and to fully justify your conclusions. We strongly recommend that your best exam preparation will be to write out homework solutions by hand, in a manner that is consistent with exam expectations using your calculator for numerical steps and for checking your work.

Final Grade for the Course: The Course Final Grade will be based on the following requirements:
Exams, worth 70% of your grade, consist of 3 hourly exams and a comprehensive final exam. Your exam grade is determined in one of two ways, based on which produces a higher average:

Option 1: Hourly exams 15% each, Final exam 25%

Option 2: Hourly exams 10% each, Final exam 40%

Exam 1, Wednesday, September 19; Chapters 1, 2, and Sections 3.1 and 3.2;

Exam 2, Wednesday, October 24; Chapter 3 and Sections 4.1, 4.2, 4.3, and 4.4;

Exam 3, Wednesday, November 28; Chapter 4, Chap. 5 Sections 1-8;

Final Exam: Tuesday, December 11, 12:00--1:50 PM in **CLBN (North Classroom Bldg) 101**

WebAssign Assignments, worth 10% of your grade, are online homework assignments corresponding to all sections of the text, typically due a few days after each section is covered in class. You should download and print out each assignment, write solutions in a homework notebook (either loose leaf or spiral bound), and then enter solutions into the online system by the due date.

The class key for Math 2144, Section 017 in WebAssign, our online homework system, is: **okstate 4406 8309**. Students should set up their account and self-enroll for access to our section during the first week of class at <https://www.webassign.net/login.html>.

Written Assignments and Quizzes will be worth 20% of your grade. Quizzes will be unannounced and over the content covered in class, in the text, and from the WebAssign online system. At a minimum 12 quizzes will be given, each worth a maximum of 10 points. The ten highest scores will be used as the Quiz Score and will count for 10% of your grade. There will also be about 8-10 written assignments that will count for 10% of your grade. Many of these written assignments will be Group assignments.

The Course Grade: The course averages given below guarantee the stated grade. These cutoff scores may be lowered if circumstances warrant:

90% guarantees the grade of A in the course,

80% guarantees the grade of B,

70% guarantees the grade of C,

60% guarantees the grade of D.

The Mathematics Learning Success Center (MLSC) is on the first floor of the Edmon Low Library. The MLSC has tutors who are able to work with students from Calculus I and help you with your questions. Hours for Calculus I will take place in the Library during the following hours:

Monday through Thursday from 1:00 PM until 9:00 PM;

Friday from 1:00 PM until 5:00 PM;

Sundays from 3:00 PM until 9:00 PM.

Important Dates:

Monday, August 27, 2012: Last day to drop a course with no grade and no fees.

Friday, August 31, 2012: Last day to drop a course with 50% fees and grade of "W"

Monday, September 3: Labor Day.

Tuesday, October 2, 2012: Six-week grades are due

Friday, October 5, 2012: Fall Break Day

Friday, November 9, 2012: Last day to drop or withdraw with an automatic grade of "W"

Friday, November 30, 2012: Last day to drop with an assigned grade of "W" or "F."

December 3-7, 2012: Pre-Finals Week

December 10-14, 2012: Finals Week

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Textbook: *Calculus 2e* by Jon Rogawski.

8/20	M	Pre-calculus Review: Sect. 1.1, 1.2, 1.3, 1.4, 1.5, and 1.6	10/15	M	Sect. 4.4: The Shape of a Graph
8/22	W	Sect. 2.1: Limits: Rate of Change and Tangent Lines	10/17	W	Sect. 4.5: L'Hopital's Rule
8/24	F	Sect. 2.1: Continued	10/19	F	Sect. 4.6: Graph Sketching and Asymptotes
8/27	M	Sect. 2.2: Limit: a numerical and graphical approach	10/22	M	Review for Exam 2
		Sect 2.3: Basic Limit Laws	10/24	W	Exam 2: Chapters 3 and 4.1, 4.2, 4.3, 4.4
8/29	W	Sect. 2.4: Limits and Continuity	10/26	F	Sect. 4.7: Applied Optimizations
8/31	F	Sect. 2.5: Evaluating Limits Algebraically	10/29	M	Sect. 4.9: Antiderivatives
9/3	M	Labor Day	10/31	W	Sect. 5.1: Approximating and Computing Area
9/5	W	Sect. 2.6: Trig Limits (Read)	11/2	F	Sect. 5.1: Continued
		Sect. 2.7: Limits at Infinity	11/5	M	Sect. 5.2: The Definite Integral
9/7	F	Sect. 2.8: Intermediate Value Theorem	11/7	W	Sect. 5.3: FTC, Part I
		Sect. 3.1: Definition of the Derivative	11/9	F	Sect. 5.4: FTC, Part II
9/10	M	Sect. 3.2: The Derivative as a Function	11/12	M	Sect. 5.5: Net or Total Change as the Integral of a rate
9/12	W	Sect. 3.3: Product and Quotient Rules	11/14	W	Sect. 5.6: The Substitution Rule
9/14	F	Sect. 3.4: Rates of Change			Sect. 5.7: Further Transcendental Functions
9/17	M	Review for Exam 1	11/16	F	Sect. 5.8: Exponential Growth and Decay
9/19	W	Exam 1: Chapters 1, 2, and 3.1, 3.2	11/19	M	Sect. 6.1: Areas between Two Curves
9/21	F	Sect. 3.5: Higher Derivatives (Read)	11/21	W	Thanksgiving Break
		Sect. 3.6: Trig Functions	11/23	F	Thanksgiving Break
9/24	M	Sect. 3.7: The Chain Rule	11/26	M	Review for Exam 3
9/26	W	Sect. 3.8: Derivatives of Inverse Functions	11/28	W	Exam 3: Chapters 4.5-7,9; 5.1-8, 6.1
		Sect. 3.9: Exponential and Log Derivatives	11/30	F	Sect. 6.2: Setting up integrals: volume, density, average value
9/28	F	Sect. 3.10: Implicit Differentiation			
10/1	M	Sect. 3.11: Related Rates			PRE-FINALS WEEK
10/3	W	Sect. 4.1: Linear Approximations and Applications	12/3	M	Sect. 6.3: Volumes of revolution
10/5	F	Fall Break Day	12/5	W	Sect. 6.4: Volumes: Shell Method
10/8	M	Sect. 4.1: Continued	12/7	F	Review for Final Exam
10/10	W	Sect. 4.2: Extreme Values			FINAL EXAM WEEK: 12/10 - 12/14
10/12	F	Sect. 4.3: The MVT and Monotonicity			

Final Exam for Calculus, 2144.017: Tuesday, December 11, 12:00 - 1:50 PM Place: CLBN 101

Group Written Assignment and Roles: OSU-Math

This course will feature group work and cooperative learning in class and outside of class. Groups will consist of four students; each member will have an assigned role with defined responsibilities. Groups will work on activities in class and will be expected to meet at least twice weekly outside of class in order to complete the weekly group assignments. Group members and roles will be rotated each week so that all group members have the opportunity to work with a variety of classmates and to experience each Group role. The Group roles are the **ORGANIZER**, the **SCRIBE**, the **UNDERSTANDER**, and the **MATH CHRONICLER**. These are described below.

ORGANIZER: The Organizer is responsible for arranging and running the meetings. If the team has only three members, or if one of the four members cannot attend, the Organizer should also take one of the other roles. When the homework is returned, the Organizer sees that it is photocopied and distributed so that each team member's portfolio contains a copy of the returned homework. Also, based on feedback on returned homework, the Organizer provides a corrected version of the homework to each team member.

SCRIBE: The Scribe is responsible for writing up the single final version of the homework to be handed in. This is the only version of the Group's homework that will be accepted or graded. Each member of the group will receive the same grade as long as they work with the team. Students who do NOT participate will receive a zero. Whenever possible, your solutions should include symbolic, graphical and verbal explanations and/or interpretations. Diagrams and pictures should also be provided if possible. See the "Four Characteristics of Good Mathematical Writing" below for more information on the format of group homework.

UNDERSTANDER: During each team meeting, whether in class or outside of class, the Understander assists the group by paraphrasing the ideas presented by other group members, e.g. "Let me make sure I understand, the graph goes up and this tells us" The Understander is responsible for making sure that everyone in the group understands the flow of ideas and the solutions to the problems being discussed by the team members. The Understander is also responsible for presenting the problems, the Group discussion, and the solutions to the class if the group is called on. The Understander should keep notes on the flow of ideas and alternate solutions that were discussed by the Group but were not used in the final version of the homework. These notes should be made available to the Scribe and the Math Chronicler for purposes of writing the final version of the homework to be handed in and the Math Chronicler's Report.

MATH CHRONICLER: The Math Chronicler writes a history or record of how the group's working sessions went, how often and how long the team met, what difficulties or successes the team may have had (with mathematics or otherwise). If there were disagreements about the solution of a problem, the chronicler should present sketches of alternate solutions or explain the various differences that were discussed. The report should list the members of the team who attended each group session and their roles. The report should be on a separate sheet of paper and this report should be the first page of the team's homework solutions.