

**DEPARTMENT OF MATHEMATICS  
COLLEGE OF SCIENCES  
CENTRAL WASHINGTON UNIVERSITY  
COURSE SYLLABUS WINTER 2014**

1. **MATH 170 Intuitive Calculus**

<u>COURSE NUMBER</u>	<u>TIME/DAY</u>	<u>BLDG/ ROOM</u>	<u>INSTRUCTOR</u>
12970	11:00-11:50	Black 224	Dr. Janet Shiver

2. **Textbook and Materials:**

- The text for this course is *Calculus Concepts*, 5<sup>th</sup> Edition, LaTorre, Kenelly, ...
- A graphing calculator is **required**. The TI- 84 or TI-84 plus is strongly recommended and will be used by the instructor for classroom demonstration. The instructor may not be able to answer questions concerning the operation of any calculator other than the TI-84. Calculators should be brought to class on a regular basis.

3. **Office Hours and Phone Numbers:**

Office: Bouillon 117

Phone: 963-2834

Email: [shiverj@cwu.edu](mailto:shiverj@cwu.edu)

Office hours: 10:00 – 11:00 or by appointment.

4. **Course Description:** This course is designed to introduce the basic concepts of calculus in the context of change. Real world data will be used to explore functions and models and to conceptualize change. Students will be introduced to the ideas of limit, derivative and integral and will learn to apply these concepts to real life situations.

5. **Course Rationale:** To meet the expectations for mathematics education for middle level teachers, a shift in content knowledge, instructional methods and assessment practices is crucial. The *Principles and Standards for School Mathematics* (NCTM 2000) outlines the specific changes needed in pre-service mathematics education including the development of appropriate teaching methods, the use of technology, the understanding of the historical development of mathematics, and the development of effective methods for communication. This course is designed to address these changes in mathematics education and to prepare you to teach important mathematical content to middle level students.

6. **Course Objectives:** Students will be able to,

- set up, appropriately label and interpret graphs and mathematical models.
- estimate limits graphically and numerically
- use models to answer real world questions and to make predictions
- select an appropriate model to reflect the behavior of a set of data
- find and interpret descriptions of change.
- estimate rates of change using the difference quotient.
- sketch and find the slopes of secant and tangent lines.
- find and interpret derivatives
- approximate change using derivatives
- find the relative and absolute extreme points, determine concavity and inflection points of various models
- set up and solve optimization problems

- approximate area between curves
- find and interpret simple antiderivatives.

7. **Course Expectations:** Students will be expected to read the text prior to class, to complete all assigned problems on time and to seek outside assistance when difficulties are encountered. All outside assignments should be NEATLY written **in pencil** or typed and all supporting work must be shown. Students who do not write in pencil will have 10 points deducted from their grade on each assignment. Assignments that are sloppy or do not show an appropriate amount of work will not be graded and will receive a zero. The daily assignments are a very important component of the course. The time devoted to assigned problems will pay off on tests and quizzes. The best way to insure successful completion of this course is to come to class and keep up with the assignments. Remember, mathematics is like a foreign language. To be successful in mathematics takes practice. Take home assignments will be accepted up to one day late but 20 points will be deducted from the grade received on the assignment. Late work is anything handed in after the start of class on the day it is due.
8. **Absence Policy:** Regular attendance is essential for successful completion of this course. As you prepare to become a teacher or other professional, you need to become accustomed to being on time. Regular attendance demonstrates professionalism and dedication. A student absent from a test or other class assignment will be given a **zero** unless excused in advance by the instructor. Extenuating circumstances such as illness or injury will be evaluated on a case- by- case basis but must be accompanied by a **doctor's note** if the student wishes to make-up the exam. Please have supporting documentation available for review upon returning to class or you will **not be allowed** to make up the missed work. **More than 4 unexcused absences from this class may result in you being dropped from the course with a grade of F for the quarter.**
9. **Grading Policy:** The course grade will be determined as follows:  
 Average of Unit Tests = 50%  
 Average of Homework/ notebook/labs/quizzes/projects = 25%  
 Attendance = 5% (0 absences – 100, 1 absence – 90, 2 abs – 80, 3abs – 70, etc)  
 Final Exam = 20%

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100%	90-92%	87-89%	83-86%	80-82%	77-79%	73-76%	70-72%	67-69%	63-66%	60-62%	<60%

10. **Academic Honesty:** The integrity of students and their written and oral work is a critical component of the academic process. There are times when it is proper to get help from other and times when it is not. Feel free to ask others for help on homework, activities and take-home assignments and quizzes. During in-class quizzes and tests all work will be done individually. All written work submitted in this course must properly document all outside sources used. The submission of another's work as one's own is plagiarism, and will be dealt with using the procedures outlined in the Undergraduate Catalog.
11. **Student Disabilities:** Students with a documented disability who wish to set up academic adjustments in this class should directly discuss accommodations with the instructor after ensuring that disability services has sent a copy of the "Confirmation of Eligibility for Academic Adjustments" to the instructor.

12. FIRE! In the event of a fire alarm signal students will exit the building in a quick and orderly manner through the nearest hallway exit. Learn the floor plan and exits of this building. Do not use elevators. Crawl on the floor if you encounter heavy smoke. Assist disabled persons and others if possible without endangering your own life.
13. **Course Outline:** This schedule is a **rough** outline of the topics covered in this course and may be modified by the instructor at any time.

Date	Chapter	Topic	Page	Assignment	Assessment
January 6		Syllabus and Tower of Hanoi Problem			
7	1	1.1 Functions - Four Representations	8	1,2,4,8,11,17,19,21,27,31,33,35,39	
8		1.2 Function Behavior and Limits	13	7,11,15,19,21,24,26	Domain Worksheet
9		1.3 Limits and Continuity	30	1,3,4,9,11,14,17,23,28,31,33,35	
10		1.4 Linear Functions and Models	42	1,4,7,11,14,17,21,23	
13		1.5 Exponential Functions and Models	53	1,7,8,9,13,15,19,26, 28	
14		1.8 Logarithmic Functions	81	1,3, 5,6,7,8,10, 13, 18,23, 25	
15		1.9 Quadratic Functions	91	2, 7-14, 15, 17,19	
16		1.11 Cubic Functions	107	1, 4, 6, 7-14, 15, 18, 19, 21	
17		1.12 Cyclic Functions	115	1, 3,6, 9. 13,15,18,19,23,26	
20		Martin Luther King Day			No Class
21		Review			
22	2				Test Chapter 1
23		2.1 Measures of Change Over an Interval	134	1, 5, 8, 9, 12,13, 17, 20	
24		2.2 Measures of Change at a Point	147	1, 4, 6, 7, 9, 11, 13, 15,19, 24, 28	
27		2.3 Rates of Change	157	1, 3, 5, 9, 11, 15, 19	
28		2.4 Rates of Change – Numerical Limits	163	1,2, 5, 9, 11, 15-18, 20, 21	
29		Faculty Development Day			No Class
30		2.5 Rates of Change Defined over Intervals	167	1, 4, 6, 9, 11, 16, 17	
31		2.6 Rate of Change Graphs	180	1, 7, 9, 11, 15, 17, 22	
February 3		Review			
4					Test Chapter 2
5	3	3.1 Simple Rate of Change Formulas	198	1-25 odd, 27, 29, 33, 36	
6		3.2 Exponential, Logarithmic, and cyclic Rate of Change	209	1-19 odd, 21, 23,29	
7		3.3 Composed Rates of Change	216	1, 7, 9-15 odd, 17, 19, 23	
10		3.4 Rates of Change of Composite Functions	223	1-27 odd, 33, 36	
11		3.5 Multiplied Rate of Change Functions	232	1, 3, 7, 11,13, 17 19, 23,	
12		3.6 Rates of Change of Product Functions	237	1,3,5,7,9,15, 17,19, 21,23	
13		3.7 Limits of Quotients and L'Hopital's Rule	244	1-27 odd	

14		Review			
17		President's Day			No Class
18	4				Test Chapter 3
19		4.2 Relative Extreme Points	264	1,3,5,7,9-12, 17, 19,21,23,25,27	
20		4.3 Absolute Extreme Points	271	1,3,5,7,9,11,13,17,19	
21		4.4 Inflection Points and Second derivatives	280	1, 3,5, 7,8,11,13,15, 19, 21,25,27, 34	
24		4.6 Optimization of Constructed Functions	298	1,3, 4, 9,11, 15	
25		4.6 Optimization of Constructed Functions			
26		4.7 Related Rates (optional)	309	1,3,5,7,9,13, 17, 22, 23, 25, 27	
27		Review			
28					Test Chapter 4
March 3	5	5.1 Results of Change	324	1,3,7,9,13,15	
4		5.2 Limits of Sums and the definite Integral	338	1,3,7,11,14,19,23	
5		5.3 Accumulation Functions	350	1,3,5,9,11,13, 15-18, 19	
6		5.4 The Fundamental Theorem	363	7-10, 11,13,15,17,19,21,25,33	
7		5.5 Antidervative Formulas	373	1-9 odd, 15, 16, 19, 23	
10		5.6 Definite Integral	381	1-8, 9, 11, 13, 15, 17, 21	
11		5.7 Differences of Accumulated Change	389	1,3,5,7,9, 11, 13, 15	
12		5.9 Integration of Composite Functions	399	MAYBE	
13		Catch-up			
14		Study Session (Optional)			
18		FINAL EXAM : 8:00 – 10:00			FINAL

13. **Notebook Requirements:** You keep a well-organized, 3-ring binder. The front cover of the binder needs to be labeled with your name, the course name and number and your instructors name. Your syllabus should be placed inside the binder on the first page. Your notebook should include the following sections,

- A. Notes – this section will contain all the notes given to you as well as the notes taken in class.
- B. Activities – this section will contain all in-class and out of class activities and take home assignments not including problems from the book
- C. Homework – this section will contain the assigned problems from the book
- D. Assessments – this section will contain all tests and quizzes

You will turn in your notebook on each of the test dates at which time your homework will be graded. Homework will be graded based on neatness and a real attempt to solve the problem. It will not be graded for accuracy. Each student will be allowed two missed assignments for the quarter without penalty.