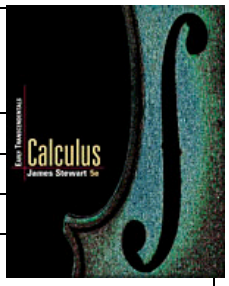
Syllabus for: (name of class)

Math 50A-E6402 (036402) *Calculus I: Differential Calculus*



Semester & Year:	***Summer*** 2014
Course ID and Section Number:	Math 50A-E6402 (036402)
Number of Credits/Units:	4 units
Day/Time:	MTWTh 11:00am-12:30pm,
Location:	Humboldt State University (HSU) Campus, Arcata. BSS Bldg. (just west of intersection of 16th & Union St), Rm BSS 302
Instructor's Name:	Teresa ("Tami") Matsumoto
Contact Information:	Office location and hours: BSS 312, HSU Campus; TTh 9:30-10:30, plus by chance and by appt. Phone: (707)476-4543 at CR, Fax: (707)476-4424 at CR Email: tami-matsumoto@redwoods.edu

Course Description (catalog description as listed in CR's official course outline):

MATH-50A Differential Calculus - (4 units lecture) A study of limits, continuity, and derivatives of algebraic, transcendental, and trigonometric functions. Applications of the derivative include optimization, related rates, examples from the natural and social sciences, and graphing of functions. The course introduces the integral and the connection between the integral and derivative. Note: A graphing calculator is required. Letter Grade Only. CSU and UC Transferable. *Prerequisites: MATH-25 and MATH-30 (or equivalent)*

Student Learning Outcomes (as listed in CR's official Math 50A course outline) :

What should the student be able to do as a result of taking this course?

Some objectives in terms of specific, measurable student accomplishments are:

1. Use the theory of differential calculus as a fundamental problem-solving tool.
2. Apply the concepts of the derivative and the integral to solve real-world problems and applications.
3. Use graphing technology to visualize functions, explore mathematical concepts, and verify results in differential calculus.
4. Use sound mathematical writing and appropriate use of numerical, graphical, and symbolic representations to present solutions of mathematical exercises and applications in differential calculus.

Refer to http://msenux.redwoods.edu/mathdept/outlines/current/math50a.php

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

The student code of conduct is available on the College of the Redwoods website at: http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

Math 50A Differential Calculus

Information follows in the following sections:

1. About Calculus
2. Materials you will need
3. Course Content Organization
4. Course Requirements
5. Homework
6. Creating Your Own Personal CALCULUS REFERENCE BOOK
7. Schedule Information
8. Grading Information

1. About Calculus

cal·cu·lus (/kalkyələs/)
noun

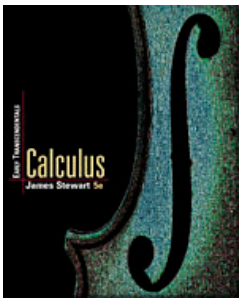
1. the branch of mathematics that deals with the finding and properties of derivatives and integrals of functions, by methods originally based on the summation of infinitesimal differences. The two main types are *differential calculus* and *integral calculus*.
2. MathematicsLogic : a particular method or system of calculation or reasoning.

Calculus is the mathematical study of behaviors of functions – in particular, rates of change and how things change. It really helps to have good algebra skills, because then you can focus on the new ideas and new notation. We will look at functions differently than you have before.

You will need to learn (a la Bloom):

- Knowledge
  - Definitions
  - Types of Graphs
  - Different Formulas
  - Main Ideas
- Comprehension
  - How related things compare (similarities, differences)
  - What different things mean or tell us
  - How to interpret summary information
  - How to make predictions based on limited information
- Application
  - How to apply what you know to new situations
  - How to make good use of information
  - How to solve problems, combining together what you have learned
- Analysis
  - How to make inferences from analysis of complex information
  - Recognizing importance and significance of component parts
- Synthesis
  - How to understand a situation and pull together all that you have learned, to reach appropriate conclusions and inferences
- Evaluation
  - How to look back to assess what was done (by you or others) and evaluate the results

2. Materials you will need:



- **Required Text**: ***Calculus - Early Transcendentals***, 5th Edition, by James Stewart - McMaster University, ISBN #0534393217 (with Tools for Enriching Calculus Video CD-ROM and BCA Tutorial). 2003. Brooks/Cole, a division of Thomson Learning, Inc. The text is available in the CR Library and may be checked out for the entire semester. You can also buy your own copy online very inexpensively.
  - **Recommended: <u>Student Solutions Manual</u>** (ISBN 0534393330 / 978-0534393335); **<u>Study Guide</u>** (ISBN 0534393314 / 9780534393311)
- **Graphing Calculator**: A Graphing Calculator, such as a TI-83 Plus, TI-84, or TI-89. A limited number are available **<u>for rent</u>** – in the Math Lab, ASC 101, CR Eureka Campus.
- **Bound Notebook with Grid Paper**: Roaring Spring #77475 or Ampad #26-251 (about $2 - $6), for example. Check to make sure it is **bound** and has **graph paper** in it. You will use this to build yourself a reference book (see the "Reference Book Information" also).
- **Time. Lots!!** This 4-unit summer class is taught in 10 weeks, with class meetings scheduled 6 hrs/week. Outside of class time, please block out at least 15 more hours *(possibly as much as 20 hours)*, per week, to devote to this class.
- **Supplemental Handouts**. There will be lots of handouts some of which you may have to print from "myCR". It is your responsibility to make sure that you get a copy of all supplemental material, even if you miss class.
- **Paper**: Homework Paper and scratch paper, lots of it! It is fine with me if you RE-USE paper. Paper that's only been used on one side is still fine (in general) on the other side. You will also need some graph paper. Get it in a pad or a package of loose-leaf sheets (rather than stuck in a notebook), or print it from the web. Many people find it helpful to get graph paper with heavier lines on every fifth line to make counting easier.
- **Pencils**: Lots. Math problems should be done in pencil in this class (as in math classes in general). If you like softer lead (I find it writes darker easier) then you might like "2B" mechanical pencil lead (I prefer "2B" to "HB" which I find not as easy to work with).
- **Erasers**: At least one.
- **A ruler**: Important for drawing tables and graphs carefully and correctly.
- **Computer Access** for:
  - **Email:** I expect you to have regular access to a computer and expect to be able to contact you easily. The College uses your "mycr.redwoods.edu" email address to communicate with you so it is important that you receive those email messages; you can set it up to autoforward those emails to another email address if you prefer.
  - **"myCR" course materials**. We will have some course materials available using the "myCR" course system. (This is a separate thing from your email but you need access to a computer for this also.)

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3. Course Content Organization:

The material will be grouped into four "Learning Units" with a Unit Exam at the end of each of Units 1, 2, and 3, and a Final Exam at the end of the term, which will be comprehensive.
There will also be a "Gateway Exam" after we learn derivatives and the Chain Rule in Chapter 3, "through which" you must pass in order to pass Calculus I. If you cannot pass the "Gateway Exam," given multiple chances, then you are <u>*not ready*</u> for Calculus II.

- Unit 1: Basic Ideas – Parts of Chapters 2 and 3
- Unit 2: Details and Depth – More of Chapters 2 and 3
- Unit 3: Applications – a little bit of Chapters 2 and 3, plus most of Chapter 4
- Unit 4: Working Backwards: Antiderivatives – the end of Chapter 4 and most of Chapter 5

Unit Exam dates will be announced at least one week in advance and will be posted in "myCR."

The Final Exam is scheduled for Thursday, July 31, 11:00-12:30. Please plan to be there.

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4. Course Requirements (*subject to change with fair notice*):

Participation in Class Activities: Attendance and participation are essential to the learning process. In addition, everyone benefits from your input and participation, and some work we do will be in groups! One important aspect of this course is the incorporation of active learning in class; this requires everyone's participation, particularly during in-class activities. Also, the best way to insure having a successful experience in any course is to come to every class meeting and keep up with the assignments. There will often be handouts during class to be turned in at the end of class. If you miss more than four class sessions, you may be dropped from the course.

I realize that sometimes things come up and getting to class is impossible. In those cases, just communicate with me as soon as you possibly can. This is especially important if you are missing class on a day we are scheduled to have an exam!

Note that ALL students remain responsible for ALL assignments given and those assignments are expected to be turned in ON TIME. If you miss a class, the assumption is that you will get the necessary information to complete the assignment by the due date and be prepared to continue in the normal flow of the course.

CAUTION: the material builds from one week to the next and so
IT IS STRONGLY URGED THAT ALL STUDENTS ATTEND ALL CLASSES.

Problem Sets, assigned from the textbook: Problems will be assigned every class. There will be "Basic" problems and "Advanced" problems (see "Homework"). Show your work, and work neatly and legibly. There will not be time for problems to be graded carefully, so it is very important that you check your own work before turning it in, and ask questions if you want to make sure you are on the right track.

Pop Quizzes: There may be pop quizzes. You should always bring a pencil with you to class each day to be ready for a quiz. Bring your reference book (which may be allowed for some quizzes).

Other assignments: There will be some assignments other than problems from the book. Some will be explained on handouts, some will be writing assignments, and some will be done in class. Also you will build your own Math Reference Book throughout the course.

Reference Book: Each student is required to create his/her own personal Math Reference Book throughout the term. It should be made in a bound notebook. It should have a title page at the front, followed by a table of contents. The contents should include material learned in the course. For the most part, it is up to you to decide exactly what to include, though there will be a few items I will direct you to be sure to include. Each page should be one separate topic. Suggestion: note the ***textbook*** page # to refer back to, if needed.

Exams: There will be three exams amid the term and a Final Exam on our last day. The Final Exam will be comprehensive and will be given in two parts: For one part you will be able to refer to your own Reference Book which you will be making throughout the term. About a week before each test you will be provided with a study guide for the exam. You do not need scantrons. You should always bring pencils, erasers, and your Reference Book (for grading) on test days, ***tentatively*** Thursday June 12 (Unit 1 Exam), Tuesday July 1 (Unit 2 Exam), Thursday July 17 (Unit 3 Exam), and Thursday July 31 (Final Exam).

Final exam date and time: Thursday July 31, 11:00 AM – 12:30 PM, the last day of our class.

HELP?! If you have questions, please get help! It is ***your*** responsibility to seek help if you need it. We will go over some questions in class, but we will not have enough time to answer all of everyone's questions.

DUE DATES and LATE WORK: Caveat on "due dates": While we are, by necessity, confined within a certain time framework, it is important to me that you understand the material – given that, if you have made progress on an assignment but are having trouble completing it by the due date, communicate with me to make appropriate arrangements.

5. Homework — *What, When, Why, How?*

There will be a homework assignment associated with essentially each class meeting. In general, work to finish your homework before the next class meeting, but if you have questions, you will be allowed to turn in your homework two classes after it is assigned. Since this could result in overlaps of assignments, you must be very careful to keep your assignments clearly labeled, but this system allows you to ask for clarification, if needed, so that you can then finish up that assignment and still turn it in – and understand it.

The purpose of having you do homework exercises is

(1) to give you practice with a variety of problems, and
(2) to help you to learn to write responses correctly, and
(3) to help you get some feedback so that you know what you are doing right and what you need to improve on.

I will usually assign problems that have answers in the back of the book so that you can check your work as you go along and get help when you need to. Generally, we will go over a few problems in class, but if you still have more questions, then please be sure to seek out help from me or from others, outside of class time.

There will be two categories of homework problems assigned: "Basic" and "Advanced." You must do the "Basic" problems to pass the class, but you only need to do "Advanced" problems if you want a grade of B- or higher.

Here are some very general instructions for how I want you to do your homework:

1. When you turn in your homework, if there are multiple pages, please make sure they are in the correct order. Also do not run the problems into each other – each problem should be clearly marked and easy to find.

2. Label each homework assignment clearly in the center at the top with the assignment number: "HW #1" or whatever number it is.

3. At the top right side of the page, write your name and "Math 50A" and the date.

4. Please use pencil, and erase carefully, when necessary.

5. Label each problem clearly, and paraphrase the question – you do not need to copy all the words of the question exactly as it is in the book, but you should write enough so that anyone looking at it (who does not have the book in front of them) can tell what it was that you were supposed to do.

6. Show your work – do not just turn in a list of answers.

7. Work down the page (two columns is OK) – Each problem should be below the one you just did (not next to it).

8. Check any answers that you can in the back of the book before turning it in. It is your responsibility to check your work and get help if and when you have questions.

6. Creating Your Own Personal CALCULUS REFERENCE BOOK

During the term, you will create your own personal Calculus Reference Book. In your Reference Book, you will write definitions, examples, and instructions of things that we learn in this class. This book will be useful to you throughout this course, and especially in calculus and other science courses you take after this one!
You will be allowed to use your Reference Book on our "Reference Book Quizzes" as well as when you are studying and working on your homework, of course.

- Get a bound notebook with grid paper in it (sometimes called "quad ruled"). Composition books are about $2 to $4 dollars and are sold at the CR and HSU bookstores, Staples, and other places.

- Make a Title Page. The first page of the book should be made into a title page. Create a title for your book, and include identifying information so it could be returned to you if you ever were to lose it.

- Start the Table of Contents. On the top of the **next** page (right side) write "Table of Contents" and reserve the next several pages for your Table of Contents to grow into. Skip at least 4 pages – more if your writing is large or if you anticipate entering particularly detailed information in your "T O C."

- Page 1. The first page that you write actual content information on should be numbered "1".

- Number the following pages. Number the pages, either odd and even on front and back, or you might prefer to number just the right-side pages 1, 2, 3, and so on, leaving the left sides blank at first.

- Enter information regularly as you study and do your homework. Keep just one basic topic on each page, even if you don't fill up every page. The important thing to remember is to make this useful for yourself, so that a year from now (for example), you will be able to find whatever you look for easily.

- As you add information, write corresponding entries in the T O C, listing the number of the corresponding page ***in your reference book*** to the **right** of the T O C entry.

- What to write: At times, I will direct you to include specific information in your Reference Book. Also, as you study, go over your class notes and read corresponding material in the text, synthesize important information and put it into your Reference Book. Definitions and explanations in your own words will be easier for you to understand later. Include examples and pictures, too.

Your Reference Book will be graded several times during the term. Correctness will be spot-checked (due to lack of time – not for lack of interest!). The Reference Books are graded on three areas: completeness, general correctness, and presentation.

7. Schedule Information:

Class meets MTWTh 11:00-12:30, starting on May 27 (the Tuesday after the Memorial Day Holiday), and runs 10 weeks. The last class session is the Final Exam on Thurs., July 31.

Important dates:

- **Monday, May 26 – Memorial Day *Holiday* – No CR Classes**
- **Tuesday, May 27 – First class meeting**
- **Tuesday, June 3 – Last Day to Drop and Receive a Refund**
- **Sunday, June 8 – Last Day to Drop without a "W" on your transcript**
- **Thursday, June 26 – Last Day to Petition to Graduate or Apply for Certificate**
- **Tuesday, July 8 – Last Day for Student-Initiated Withdrawal (no refund, and get a "W")**
- **The Final Exam is scheduled for Thursday, July 31, 11:00am-12:30pm.**

8. Grading information (*subject to change with fair notice*)

To pass the class (i.e., **not** get an "F"), all the following requirements must be met:

- In-class assignments – at least 60% of assignments completed satisfactorily
- Homework Exercises assigned from the textbook:
  - complete a majority of "basic" problems assigned, in a legible, satisfactory way
  - Other Assignments* – complete a majority of assignments
- Exams/Quizzes –at least 60% correct
- Reference Book – reference book must exist

To get at least a "C-" you must do all of the following:

- In-class assignments – at least 60% of assignments completed satisfactorily
- Homework Exercises assigned from the textbook:
  - complete at least 80% of "basic" problems assigned, in a legible, satisfactory way
  - Other Assignments* – complete at least two-thirds of assignments
- Exams/Quizzes – at least 65% correct
- Reference Book –reference book covering basics of the material covered

To get at least a "B-" you must do all of the following:

- In-class assignments – at least 80% of assignments completed satisfactorily
- Homework Exercises assigned from the textbook:
  - complete 90% of "basic" problems assigned, in a legible, satisfactory way
  - work on at least some of the "advanced" problems
  - Other Assignments* – complete at least 80% of assignments
- Exams/Quizzes – at least 75% correct
- Reference Book – Good reference book covering over ½ of the material covered

To get at least an "A-" you must do all of the following:

- In-class assignments – at least 90% of assignments completed satisfactorily
- Homework Exercises assigned from the textbook:
  - complete 90% of "basic" problems assigned, in a legible, satisfactory way
  - work on at least half of the "advanced" problems satisfactorily
  - Other Assignments* – complete at least 90% of assignments
- Exams/Quizzes – at least 85% correct
- Reference Book – Excellent reference book representing over ¾ of the material covered

To determine +/- grades, the entire class spread will be considered at the end of the term.

* Other assignments: There will be some assignments other than problems from the book. Some will be explained on handouts, some will be writing assignments, and some will be done in class.

CAVEAT: The above procedures are subject to change.