Syllabus for: (name of class)	**Math 25 *College Trigonometry***
Semester & Year:	Fall 2015
Course ID and Section Number:	Math 25-E8384
Number of Credits/Units:	4 units
Day/Time: **Location:**	MWF 11:40am-12:55pm Room SC 206 on CR's Eureka campus
Instructor's Name:	Teresa ("Tami") Matsumoto
Contact Information:	Office location: SC 205-B, Eureka Campus; **Office hours: MTTh 5-6pm, Wed 3-4pm (most weeks), Fri 3-4pm (many weeks), and by chance & by appointment.** **Also available in Math Lab: M 3-4, Tu 2-3:30, Th 3-3:30.** Phone: (707)476-4543, Shared Fax: (707)476-4424 Email: tami-matsumoto@redwoods.edu

Course Description (catalog description as described in course outline): A study of trigonometric functions, radian measure, solution of right triangles, graphs of the trigonometric functions, inverse trigonometric functions, trigonometric identities and equations, laws of sines and cosines, solution of oblique triangles, polar coordinates, complex numbers in trigonometric form, De Moivre's theorem, and conic sections. *Note: A graphing calculator is required.*

Student Learning Outcomes (as described in course outline) :

1. Analyze and solve problems involving trigonometric functions or analytic geometry.
2. Apply the mathematics of trigonometric functions and analytic geometry to real-world problems and applications.
3. Use graphing technology to visualize trigonometric and polar curves, explore mathematical concepts, and verify results.
4. Write solutions to mathematical exercises in trigonometry and analytic geometry using sound mathematical reasoning with appropriate use of numerical, graphical, and symbolic representations.

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 25 Trigonometry

Information follows in these sections:

1. About Trigonometry
2. Course Structure
3. Materials you will need
4. Course Requirements
5. Homework
6. Sources of Math Help
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9. Schedule information
10. Course Content: Brief Descriptions of Math 25 Units
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1. About Trigonometry

This course, Math 25 College Trigonometry is a transfer-level math course needed for preparation for calculus. Math 25 and Math 30 (College Algebra) together constitute what is often referred to as "Precalculus" and both courses are required prerequisites for Math 50A Calculus.

> Trig·o·nom·e·try (trigəˈnämitrē/)
> (from Greek *trigōnon*, "triangle" + *metron*, "measure")
> Noun 1. a branch of mathematics dealing with the relations of the sides and angles of triangles and with the relevant functions of any angles.

We will study six trigonometric functions. Understanding how functions work is critical for success in this course. Students who have already had Math 30 College Algebra (or some similar course) have an advantage in that they have more experience working more deeply with functions and function behavior. Students who have yet to take Math 30 College Algebra (or some other pre-calculus course) will have an advantage after completing this course because they will be starting that other course with more experience with different kinds of functions.

In this course, you will need to learn (a la Bloom):

- Knowledge
  - Definitions
  - Types of Graphs
  - Different Formulas
- Comprehension
  - How related things compare (similarities, differences)
  - Relationships among different trig functions
  - How to manipulate trig functions in expressions and equations
- Application
  - How to apply what you know to real-life 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
- Evaluation
  - How to look back to assess what was done (by you or others) and evaluate the results

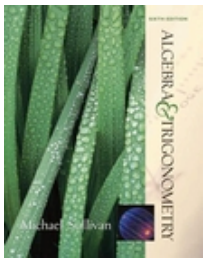
2. Course Structure

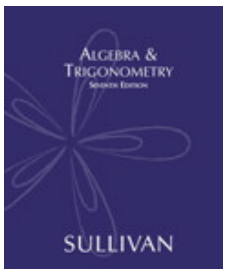
Course Structure

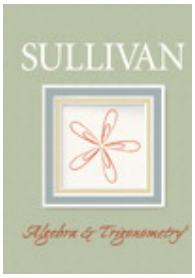
- You study the material in the text (which is organized into 9 learning units).
- You attend class sessions, you do homework (part in the textbook, and part online), you create your own Math Reference Book.
- Each unit will have a Unit Quiz except for Unit 5 which is right before the Midterm Exam. In-class Unit Quizzes will be about 20 minutes each (some might be take-home).
- There will be one Midterm exam (tentatively Oct. 16) and one Final exam (Monday Dec. 7).

- **The Final Exam is scheduled during finals week on Mon., Dec. 7, 10:45am-12:45pm**

3. Materials you will need:







- **Required Text**: ***Algebra & Trigonometry***, by Michael Sullivan, published by Prentice Hall (6^{th} or 7^{th} or 8^{th} edition). This book is used in both Math 25 and Math 30. A limited number of textbooks are available at the CR library and can be checked out for the entire semester. The textbook can also be purchased very inexpensively from various online book sellers.
  - **Recommended Supplements:** **Student Solutions Manual** (get the one that goes with your edition of the text); **Algebra Review** (ISBN-10:0131480065 • ISBN-13:9780131480063)
- **Required *Online* Material:** As part of a pilot project, we will use a few parts of Stitz Zeager "***College Trigonometry*, 3rd Edition free eBook(.pdf) (July 2011)**" available *for free* at http://www.stitz-zeager.com/
- **Calculator**: A ***Graphing*** Calculator (TI-83 or TI-84 recommended). On the Eureka campus, a limited number of rental calculators are available from the Math Lab in the ASC.
- **Bound Notebook with Grid Paper**: Roaring Spring #77475 or Ampad #26-251 (about $2 - $6), for example. Make sure it is **bound** and has **graph paper** in it. You will use this throughout the course to build yourself a reference book (see the "Reference Book Information" handout also).

- **Time. Lots!!** In your own weekly schedule please make sure that you have blocked out at least 15 hours *(possibly as much as 20 hours)*, per week, to devote to this class.
- **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 to another email address if you prefer (though you should still check it now and then just in case).
  - **Online exploration and course materials**. This is separate from your email but you will need reliable internet access when we use the online book and for completing online homework assignments.

- **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 graphs carefully and correctly.

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 essentially every class. There will be "Practice" problems, "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: as you make entries of your own, note the ***textbook*** page # to refer back to, if needed.

Exams: There will be one Midterm Exam (tentatively Oct 16) and a Final Exam during finals week. 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. You do not need scantrons. You should always bring pencils, erasers, and your Reference Book (for grading) on test days.

Final exam official date and time: Monday December 7, 10:45-12:45, during finals week.

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 three categories of homework problems assigned: "Practice," "Basic" and "Advanced." You must do the "Practice" and the "Basic" problems to pass the class, but you only need to do "Advanced" problems if you want a grade above a C.

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 have them 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 <u>in the center at the top of the page</u> 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. The "Practice Problems" should be clearly labeled "PP"; they need not be written out carefully; the idea is for you to get a lot of practice doing the problems, and it does not matter what the written work looks like. The "Basic" and "Advanced" problems should be clearly labeled and also done with more care: 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. Even for most of the "Practice" problems, some intermediate work should be evident.

7. Work down the page – Each problem should be below the one you just did (not next to it), though a two-column format would be fine.

8. Check in the back of the book (B.o.B.) before turning in your work. It is your responsibility to check your work and get help if and when you have questions.

6. Sources of Math Help

If you have questions, please get help! It is your responsibility to seek help if you need it. I will answer some questions in class, but unfortunately, we will not have enough time to answer all of everyone's questions. Some sources of help are:

- Math Tutoring Lab (strongly recommended but not required). Register for Math 252 (0 units) or Math 25L, either the 1-unit or ½-unit section for the opportunity for drop-in tutoring in the Math Lab during open hours. Math Lab is a class you register for on WebAdvisor; it is Credit/No Credit. For 1 unit of "credit" you must have 45 hours of documented attendance by the end of the semester (22.5 hours for 1/2-unit) and complete some modest assignments that help you learn math. You can sign up for ½ -unit and change to 1-unit later if you choose to.
- One-on-one Tutoring: Any CR student can sign up to meet with a tutor. Contact the ASC. (You do not need to be registered in Math Lab for this.)
- Tutors in special programs (for example DSPS, EOPS) may be eligible for special services
- Private tutors
- Other students – form study groups. You can contact classmates via discussion forums or email.
- Instructors: You can come to my office during office hours, or by appointment; you can call or email me to connect. Other instructors are willing to help, too, when available.
- Student Solutions Manual (ISBN 0534393330 / 978-0534393335)
- Study Guide (ISBN 0534393314 / 9780534393311)

7. Creating Your Own Personal MATH REFERENCE BOOK

During the term, you will create your own personal Math 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.

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

	Exams/Quizzes	Reference Book	In-class Assignments	Homework*
For A-/A	At least 85% average	Excellent Reference Book, with all or most topics covered, with corresponding table of contents	At least 90% completed satisfactorily	• At least 90% of "Practice" problems; • at least 90% of "Basic" problems completed in a legible, satisfactory way; • good work done on majority of "Advanced" problems
For B-/B/B+	At least 75% average	Good Reference Book, covering majority of course content with corresponding table of contents	At least 80% completed satisfactorily	• At least 80% of "Practice" problems; • at least 80% of "Basic" problems completed in a legible, satisfactory way; • good work done on at least some "Advanced" problems
For C-/C/C+	At least 65% average	Basic Reference Book has basic topics covered	At least 60% completed satisfactorily	• At least 70% of "Practice" problems; • at least 70% of "Basic" problems completed in a legible, satisfactory way
For D	At least 60% average	Reference Book must have at least one page of content	At least 60% completed satisfactorily	• At least 60% of "Practice" problems; • Majority of "Basic" problems completed in a legible, satisfactory way

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

* Homework will include problems from the textbook, along with other handouts and assignments.

9. Schedule Information:

Class meets MWF 11:40am-12:55pm, starting on August 24 for the fall 2015 semester.
Class meets in room SC 206.

Important dates:

- Monday, August 24 – First day of class
- Friday, Sept. 4 – Last Day to drop without a "W" on your transcript and receive a refund
- Monday, Sept. 7 – Campus Closed for Labor Day Holiday
- Thursday, Oct. 29 – Last Day to petition to graduate / receive certificate this semester
- Friday, Oct. 30 – Last Day for Student-Initiated Withdrawal (no refund, and get a "W")
- Monday, Nov. 9 – Campus Closed for Veterans Day Holiday (which is Nov. 11)
- Thurs-Sat, Nov. 26-28 – Campus Closed for Thanksgiving Holiday
- Friday, Dec. 4 – Last regular class session

- Monday, Dec. 7 – Final Exam 10:45am-12:45pm

10. Course Content: Brief Descriptions of Math 25 Units

Unit	Brief Description
1	**Angles; Trigonometric Functions defined using Right Triangles** • Unit 1 begins with a discussion of angles and various ways to measure angles: radians, decimal degrees, and degrees-minutes-seconds. You are probably familiar with degrees, but in mathematics it is more convenient to use radians. You will also learn to convert between the three measurements. • The six trigonometric functions are then defined in terms of right triangles (in Unit 2, you will learn a second approach to the definition in terms of the unit circle). You will also learn how to compute the exact values of these functions at certain angles, and approximations at more general angles. It is Math Department policy that students should be able to compute the exact values of all the circular (trigonometric) functions at the "standard" angles, i.e., all multiples of pi/6 and pi/4 radians and 30 and 45 degrees. • Finally, you will also learn some of the basic identities that are satisfied by the trigonometric functions.
2	**Trigonometric functions generalized beyond right triangles; applications involving right triangles** • The first part of Unit 2 continues the development of the trigonometric functions by studying their values at general angles. First, these values are computed by using the reference triangle technique. Then an alternative approach, using the unit circle, is given. In fact, this actually provides a second alternative definition of the trigonometric functions. It is very important that you learn both approaches to the definition and calculation of trigonometric functions. • In the second part of Unit 2, you will see how trigonometry can be used to solve a large variety of applications involving right triangles.
3	**Graphs of Sine and Cosine Functions; Simple Harmonic Motion** In this unit, you will study the basic properties of the graphs of the sine and cosine functions, with variations. You will also apply your knowledge of these to various spring problems.
4	**Graphs of all Trigonometric Functions; Graphs of some Inverse functions** In this unit, you will study the graphs of tangent, cotangent, secant, and cosecant, with variations. You will also study the inverse trigonometric functions. The textbook is quite brief in these three sections, so supplementary material and exercises areincluded.
5	**Fundamental Trigonometric Identities** In this unit you will learn more about the trigonometric functions. In order to use them for solving real-world problems, you need to know more about their relationships with each other through the various trigonometric identities.
Midterm	**Midterm Exam: Covers All material from Units 1 through 4 and part of Unit 5**
6	**More Trigonometric Identities; Applications involving triangles that are not right triangles** This unit consists of two parts. • The first part finishes the study of trigonometric identities begun in Unit 5. In this section you will use the various trigonometric identities to help solve equations involving trigonometric functions. • The second part is a study of methods for solving general triangles, using the Law of Sines and the Law of Cosines. Included are many different applications, along with a short section on two new formulas for the area of a triangle.
7	**Polar Coordinates; Polar Equations; Complex Numbers** The Analytic Geometry section of the course begins with this unit, which consists of two parts. • The first is an introduction to polar coordinates for points in the xy-plane, and polar equations and their graphs. • The second is a study of complex numbers. The two topics are related by the polar form of a complex number, which then leads to simple formulas for finding powers and roots of complex number via DeMoivre's Theorem.
8	**Conic Sections (Standard position)** This unit begins our study of the conic sections: parabolas, ellipses, and hyperbolas. We will only consider conics in standard position (parabolas with vertex at the origin, ellipses and hyperbolas with center at the origin), and in standard orientation in this unit. We will study translated conics and rotated conics in Unit 9.
9	**Conic Sections (translated and/or rotated); parametric equations** In this unit, we continue our study of the conic sections with investigations on translation and rotation of axes.
Final	**FINAL EXAM**: Comprehensive, though primarily covers material from Units 5 through 9.

11. CA OER Fall Pilot Project

This class has been selected to be part of a research study on the use and usefulness of online educational resources (OERs). The study is being done by the California OER Council, a collaboration of UC, CSU, and California Community College faculty all across the state as part of efforts to find high quality, affordable resources to save students money. As part of the study, you will be asked to participate in a short survey; **all information is confidential**.

Participation in the research survey is voluntary. If, at any point, you decide that you do not want to participate, you can stop participating with no penalty to you or your work in the class.

More details to come.

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12. In Case of Emergency

Please review evacuation sites, including the closest site to this classroom (posted by the exit of each room) and see http://www.redwoods.edu/safety.asp for information on campus Emergency Procedures.

During an evacuation:

- Be aware of all marked exits from your area and building. Know routes to the nearest exits.
- Once outside, move to the nearest evacuation point outside your building.
- Keep streets and walkways clear for emergency vehicles and personnel.
- Do not leave campus, unless it has been deemed safe by the Incident Commander or campus authorities. (Be aware CR's lower parking lot and 101 frontage are in the Tsunami Zone).

RAVE Emergency Alert System - College of the Redwoods has implemented an emergency alert system. Everyone is entered already to receive a message at his/her CR email address. You can also elect to receive an alert through your personal email, and/or phones at your home, office, and cell. This emergency alert system is available to all students, staff, and other interested parties.

Registration is necessary in order to receive emergency alerts. Please go to https://www.getrave.com/login/Redwoods and use the "Register" button on the top right portion of the registration page to create an account. Use your CR email address as your primary Registration Email. Your CR email address ends with "redwoods.edu." During the registration process you can elect to add additional information, such as office phone, home phone, cell phone, and personal email.

CR will test the system each fall and spring semester to check whether you are getting alerts at all of your destinations. Please contact CR Campus Public Safety, 707-476-4112, security@redwoods.edu, if you have any questions.

CAVEAT: The above procedures are subject to change.