

SEATTLE CENTRAL COMMUNITY COLLEGE  
PRE-CALCULUS II (MATH &142) SYLLABUS  
SPRING, 2011

**I. INSTRUCTOR INFORMATION:**

Instructor:	Tesfaye Terefe
Office:	SAM 419
Office hours:	Daily, 10:00 – 10:50 a.m.
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**II. COURSE INFORMATION:**

Course Title:	<b>Pre-Calculus II</b>
Credits:	Five
Meeting Time:	Daily, 11:00 – 11:50 a.m.
Room:	BE 4183

**III. Prerequisites:**

- MATH 141 with grade point average 2.2 or better. Or two years of high school math plus satisfactory placement test scores.

**IV. Textbook(s) and Other Materials:**

Textbook:

- *Precalculus: Mathematics for Calculus 5<sup>th</sup> Edition*, by James Stewart, Lothar Redlin, and Saleem Thomson, Brooks/Cole 2006.
- Student solutions manual for *Precalculus: Mathematics for Calculus 5<sup>th</sup> Ed.*(optional).

Other Requirements:

- A graphing calculator is required (TI-83 or TI-83<sup>+</sup> is recommended). **Note:** Calculators that have algebraic capability can not be used for tests and final exam.
- Protractor, ruler, compass, set-square, colored pencils, and 8.5” by 11” both lined and graph paper to take notes and to do class work and homework.

**V. Course Description:**

Pre-Calculus II is the second in a series of two college level courses that is designed primarily for students who are intend to take the calculus with analytic geometry courses. Its primary goal is for students to gain a theoretical and operational understanding of the Pre-Calculus topics such as the study of trigonometric functions, analytic geometry in two and three dimensions, and related algebra topics necessary for calculus. To provide the mathematical background needed for calculus, concepts are going to be presented and explored from algebraic, graphical, and numerical perspectives.

## VI. Course Objectives:

Upon successful completion of this course, the student should be able to:

- Recognize and use the proper vocabulary related to the study of angles in trigonometry.
  - a. Initial and terminal side
  - b. Positive and negative angles
  - c. Standard position
  - d. Coterminal and quadrantal angles
- Measure angles using both degree and radian measure, and convert from radian to degree measure and vice versa.
- Find angles that are coterminal with a given angle, and find the reference angle for a given angle.
- Find the length of a circular arc, area of a sector, linear speed, and angular velocities when the central angle is given, and apply this concept to solve real-world problems.
- Define all the six trigonometric functions using a right triangle and find exact and approximate values for the six trigonometric functions of special angles ( $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ).
- Solve problems involving right triangles using right triangle trigonometry and apply solutions to real-world problems.
- Derive the law of *sines* and the law of *cosines* and apply these laws to the solution of real-world problems involving triangles.
- Find the area of triangles using Hero's formula ( $A = \sqrt{(s-a)(s-b)(s-c)}$ ) and the sine formula ( $A = \frac{1}{2}ab \sin \theta$ ).
- Use the unit circle to define the six trigonometric functions, and relate these definitions to the right-triangle definitions.
- Identify the periodic and symmetry properties of the six trigonometric functions and describe the general shape of their graph.
- Find the domain, range, amplitude, period, phase shift, and vertical shift and sketch the graph of each of the six trigonometric functions given an equation in standard form (e.g.,  $y = A \sin(Bx + C) + D$ ) by using transformations for at least one period.
- Write equations of trigonometric functions given the amplitude, period, phase shift, and vertical shift.
- Graph compound trigonometric functions using addition of ordinates (optional).

- Investigate trigonometric identities graphically and verify algebraically.
  - a. Reciprocal
  - b. Quotient
  - c. Pythagorean
  - d. Even-Odd
  - e. Cofunction
  - f. Sum and Difference
  - g. Double and Half Angles
- Identify and use reciprocal identities, quotient identities, Pythagorean identities, the sum and difference identities, and the half-angle and double angle identities to simplify expressions, verify other identities, and solve equations.
- Solve trigonometric equations both graphically and algebraically.
- Define the inverse trigonometric functions and describe the shape of the graphs.
- State the domain and range of each inverse trigonometric function.
- Evaluate inverse trigonometric relations and functions.
- Compose trigonometric and inverse trigonometric functions.
- Graph inverse trigonometric functions and identify their domain and range.
- Apply trigonometry to problems in geometry, and use the trigonometric functions to model real-world phenomena.
- Analyze the conic sections (parabolas, circles, ellipses, and hyperbolas) and their properties.
- Use conic sections to model motion, reflective properties of light and sound.
- Sketch the graphs of parametrically defined plane curves, find parametric equations for a given plain curve, and describe and graph the curve represented by parametric equations by eliminating the parameter.
- Decompose a rational expression into partial fractions.
- Model and solve real-world problems using algebra, trigonometry, and analytic geometry to acquire a solid foundation in pre-calculus preparing them for calculus.
- Develop problem-solving skills using algebraic, numerical, and graphical methods that foster critical thinking, enhance knowledge and confidence that is necessary for his/her area of study.

## VII. SCHEDULE (Tentative):

## Week/Unit sections:

Week	Unit sections
1. (04/04 – 04/08)	6.1 - 6.2
2. (04/11 – 04/15)	6.3 - 6.5
3. (04/18 – 04/23)	5.1, 5.2 , Test 1
4. (04/25– 04/29)	5.3 – 5.5*,
5. (05/02 – 05/06)	7.1, Test 2
6. (05/09 – 05/13)	7.2, 7.3
7. (05/16 – 05/20)	7.4 , 7.5,
8. (05/23 – 05/27)	8.1 - 8.3, Test 3
9. (05/30 – 06/03)	10.2 - 10.3
10. (06/06 – 06/10)	10.7, 9.8*, Test 4
11. (06/13 & 06/14)	Review
12. Final Exam (Wednesday, June 15, 10:30 a.m. – 12:30 p.m.)	

\* means if time permits

## VIII. Evaluation:

### A. Procedures:

Students are evaluated on the basis of tests, projects, homework, class activities and a comprehensive final exam.

To motivate students to do their assignments on a daily basis and actively participate in class, as well as to encourage them to attend class regularly, points will be awarded for each **Class Activity**. Class activity includes but is not limited to asking questions about problems the student does not understand, answering questions asked by fellow students or the instructor, and/or making a contribution to the group activities. In addition, students may be called upon to do problems on the board from a previous lecture or assignment, and everyone in class will be asked to do one or two randomly chosen problem(s), or to present in class one of the group activities. Be aware that the instructor may surprise you with the above-mentioned activities at any time in class. There are **no make-ups** for these graded activities. All points will be added together and converted to a maximum of 50 points, used in determining the final grade.

There will be **daily assignments**, but these will be collected weekly and graded. In other words all homework assigned through Friday of this week will be collected on Monday of the next week at the beginning of the period. I suggest you keep all your homework problems in a spiral notebook, with section, page and date clearly marked.

The assignment portion of the grade is mostly based on effort. Any **late work will not be accepted** (no credit for the assignment part of that week). Please ask questions about problems you do not understand. All the assignment points will be added together and converted to a maximum of 100 points, used in determining the final grade.

**Tests** will be announced at least two days in advance. There will be a test at the end of each chapter, with a total of four tests. Each test counts for 100 points. Make-up tests will only be given in the event of an emergency provided that the student presents written official evidence (I mean it !!).

There will be **one final exam** at the end of the quarter. The final exam, which counts for 150 points, will cover material from the entire quarter. There is **no make-up** for the final exam. Students can take the final exam only on the date and time assigned by the college (no early final exam).

## B. Grading Scale:

Students' grades will be determined by overall assessment tools used during the quarter and will be calculated as follows:

- Class activities      50 points  $\approx$  7.14 %
- Assignments          100 points  $\approx$  14.28 %
- Tests                   400 points  $\approx$  57.14 %
- Final exam           150 points  $\approx$  21.43 %
- TOTAL POSSIBLE      700 points  $\approx$  100.00 %

**FINAL GRADE:** Based upon the above point distributions, the course grade is determined by the following table:

Grade	4.0	3.6 – 3.9	3.2 – 3.5	2.8 – 3.1	2.4 – 2.7	2.0 – 2.3	1.6 – 1.9	1.2 – 1.5	0.7 – 1.1	0.0
Percent	96–100	91 – 95	86 – 90	81– 85	77 – 80	72 – 76	67 – 71	62 – 66	56 – 61	Below 56

C. Anyone who quits the class and does not formally withdraw will receive "**0.0**".

None

**Traditional grades** Incomplete (I) grades may be given to students who have successfully completed all exams except their final because of an emergency.

A "no credit (NC)" grade will be given if the student makes significant progress but doesn't finish the course. Student should request NC in writing at least two weeks before the end of the quarter explaining his or her circumstances. It is up to the instructor to grant or deny NC. (NC grades do not affect your grade point average.)

## IX. Policies:

### A. Attendance Policy:

Seattle Central Community College expects students to attend all scheduled

instructional activities. Students in this course are encouraged to attend class and actively participate in their learning.

### **B. Academic Dishonesty:**

All tests, individual projects, and the final exam will be completed independently. Academic dishonesty will not be tolerated. Any project, quiz, or exam where cheating has occurred is given zero points to ALL parties (receivers AND givers of information). A report of the incident will be sent to the Dean of Student Services. He/She may file the report in your permanent record or take further disciplinary actions such as suspension or expulsion from the college.

### **C. Students with disability:**

Please talk to me during the first week of the quarter so that I can accommodate you.

### **X. GETTING HELP:**

If students need more help than can be obtained during class time, the following are recommended:

1. Work with classmates. Many students find that working with classmates is an effective method of studying and doing homework.
2. Stop by my office during my office hours.
3. Drop in and ask for help in the Math Lab (SAM 106).
4. If #1 – 3 don't work for you, make an appointment with me for additional help.

### **XI. SUGGES- TIONS:**

- Work in groups in the classroom during problem solving activities and work with a study partner on your assignments.
- Read the materials in the book before the lecture. Knowing what to expect and what is in the book, you can take fewer notes and spend more time listening and understanding the lecture.
- Don't get behind! It will be very difficult to understand the current lecture without knowing the previous material, and it's hard to catch up.
- Work on all of the assigned problems. Every one of you needs to practice. If you can't solve the homework problems, you won't be able to do them on exams. Be sure that you work toward understanding the solution to each problem, not just getting the answer.

It is my hope that you will enjoy this class and will retain what you learn, acquiring a solid base of mathematical knowledge. Any constructive suggestions on how this course is taught are gladly accepted.

## **Pre-Calculus II : Homework Problems.**

*Precalculus: Mathematics for Calculus*, 5th Ed. By Stewart, Redlin, and Watson: 2006.

Lecture	Section	Homework Problems
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1-2	6.1	p.474: 1, 4, 5, 18, 21, 23, 26, 27, 31, 33, 43, 49, 52, 54, 55, 63, 65, 69, 71, 72
3-4	6.2	p.484: 3, 7, 13, 15, 17, 19, 20, 33, 37, 41, 45, 48, 51, 52, 58, 59, 61
5-6	6.3	p.495: 3, 21, 23, 24, 33, 34, 43, 45, 49
7	6.4	p.506: 2, 5, 13, 18, 19, 28, 30, 32, 33, 39
8-9	6.5	p.513: 1 – 7 odd, 9 – 29 e.o.o., 37 – 67 odd
	<b>Review</b>	<b>Test #1</b>
10-11	5.1	p.406: 3, 15, 20, 23, 27, 28, 31, 33, 41, 43, 44, 52, 53
12-13	5.2	p.416: 7, 9, 10, 21, 22, 23, 24, 31, 37, 39, 40, 53, 54, 67, 71, 75, 76
14	5.3	p.429: 7, 11, 15, 23, 29, 31, 33, 41, 42, 49, 59, 60, 61, 62, 69, 72, 77, 78
15	5.4	p.441: 1-6 all, 7, 9, 15, 29, 42, 47, 48, 51
16-17	5.5	p. 451: 11, 17, 21, 25, 27, 29, 33, 35
	<b>Review</b>	<b>Test #2</b>
18-19	7.1	p.533: 1, 5, 13, 17, 18, 45, 51, 56, 67, 89, 95, 98
20-21	7.2	p. 539: 6, 11, 15, 19, 23, 31, 36, 51
22-23	7.3	p.548: 4, 11, 16, 27, 32, 39, 61
24-25	7.4	p.557: 2, 5, 19, 20, 31, 32, 43, 44, 50, 54, 55
26	7.5	p.568: 5, 6, 17, 18, 37, 41, 46, 51, 56, 57, 58, 65, 75, 76
	<b>Review</b>	<b>Test #3</b>
27	8.1	p.586: 1, 7, 9, 15, 19, 21, 25, 31, 35, 45, 47, 49, 51, 53
28	8.2	p.594: 1, 11, 17, 21, 29, 33, 39, 45, 49, 53, 57
29	8.3	p.603: 3, 7, 9, 15, 19, 27, 31, 33, 37
30	10.1	p.751: 1 – 27 odd, 37 – 40 all, 49, 50, 51
31	10.2	p.759: 1 – 35 odd, 41, 49, 50, 51
32	10.3	p.768: 1 – 37 odd, 40, 41
33	10.7	p. 807: 1 – 11 odd, 23 – 29 odd, 37 – 41 odd
34	9.8	p.720: 3, 9, 11, 15, 25, 33, 37, 39, 44 (If time allows)
	<b>Review</b>	<b>Test #4</b>