I. General Departmental Information for Trigonometry

Optional: Student Solution Manual

Syllabus: Chapters 1 -- 8, with sections 5 and 6 of Chapter 8 optional

Calculator: You will need a calculator with trigonometric functions. If you plan to take our scientific calculus course (MATH 2413) later, ask about graphing calculators.

Course Prerequisite: One semester of high school precalculus or the equivalent or College Algebra or the equivalent or recent completion of ACC’s Intermediate Algebra, MATD 0390 (DVM 1193), with a grade of B or better. If you cannot do the prerequisite homework assignment fairly easily, your algebra skills probably need reinforcement before taking Trigonometry.

Attendance: As in any math class, students are expected to attend all class periods. The sequential nature of mathematics means that each absence tends to create a learning gap. Exchange phone numbers with at least one other student so that if you have to miss a class, you can get the notes and assignments.

Time Required: In college-credit courses, you are expected to spend two to three hours outside of class for every hour in class. In this course, that means about 6 - 9 hours per week, some of which may be spent in the computer lab or testing center. Take time now to plan your schedule.

Outside help: The Learning Lab has walk-in tutoring and tutoring lab classes available. Sign up for the lab classes during late registration. The Learning Lab also has tutorial software to accompany our textbook. The Learning Resource Center has a set of videotapes keyed to the text by section.

Withdrawals and Incompletes: After the withdrawal date each semester, neither the student nor the instructor may initiate a withdrawal. It is the student's responsibility to initiate all withdrawals in this course. The instructor may withdraw students for excessive absences (4) or failure to meet course objectives but makes no commitment to do this for the student. Attendance is important in this course and expected. Incomplete grades (I) will be given only in rare circumstances. Generally, to receive a grade of I, a student must have taken all examinations, be passing, and have a personal tragedy occur after the last date to withdraw which prevents course completion.

II. Instructor Information

Dr. Mary Parker, NRG 2147, Phone: 223-4846 (leave messages), mparker@austin.cc.tx.us
http://www2.austin.cc.tx.us/mparker/ Department fax number: 223-4641
Office hours: MW 1:50-2:50 pm, MW 6:00-6:30 pm, TH 8:40 – 9:10 am, 12:00-12:30 pm
I am available for appointments at other times.

III. Calendar and Grading Information

<table>
<thead>
<tr>
<th>Week</th>
<th>Sections</th>
<th>Week</th>
<th>Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 17</td>
<td>1.1*, 1.2*, 1.3*, 1.4</td>
<td>Mar. 20</td>
<td>5.3, 5.4, 5.5</td>
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<td>Jan. 24</td>
<td>1.5, 2.1, 2.2</td>
<td>Mar. 27</td>
<td>5.6, 6.1</td>
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<td>Jan. 31</td>
<td>Handout, 2.3, 2.4</td>
<td>Apr. 3</td>
<td>6.2, 6.3</td>
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<tr>
<td>Feb. 7</td>
<td>2.5, 3.1</td>
<td>Apr. 10</td>
<td>6.4, 7.1, 7.2</td>
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<tr>
<td>Feb. 14</td>
<td>Test 1 (through ch 2), 3.2</td>
<td>Apr. 17</td>
<td>Test 3 (through Ch. 6), 7.3, 7.4</td>
</tr>
<tr>
<td>Feb. 21</td>
<td>3.3, 3.4, 4.1</td>
<td>Apr. 24</td>
<td>7.5, 8.1*, 8.2, 8.3</td>
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<td>Feb. 28</td>
<td>4.2, 4.3, 5.1</td>
<td>May 1</td>
<td>8.4, 8.5, 8.6</td>
</tr>
<tr>
<td>Mar. 6</td>
<td>5.2, Test (through Ch. 4)</td>
<td>May 8</td>
<td>Review and Final Exam (chs. 1-8)</td>
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</tbody>
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* review material from previous courses

**Grades.** Five grades will be averaged: the four test grades and the one combined daily quiz / project / homework grade.

A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: below 60

If you believe that I have made a mistake on grading anything, write a note of explanation on a separate sheet of paper, staple it to the paper, and turn it in for re-grading. I am happy to discuss this with you outside of class, but grades will never be changed or corrected "on the spot. Such corrections must be made very soon after the paper was originally graded. No grades will be corrected except through this procedure.

**Calculators and Software:** On the tests, about 3/4 of the work will be without a calculator. Be sure that you do the homework in such a way that you can do appropriate problems on the tests without a calculator. For the calculator problems on the tests, a scientific calculator is adequate, although a graphing calculator is allowed. All required work with graphing calculators is in the projects. **You do not have to buy anything.** Free graphing software is available and graphing calculators, with manuals, are available for 2-hour checkout in the LRS. More information about using the software is available from [http://www2.austin.cc.tx.us/mparker/1316/](http://www2.austin.cc.tx.us/mparker/1316/).

**Homework:** All of the homework problems for the course are listed in this handout. You are responsible for doing the problems over the material covered in class each day by the next class, checking your solutions, asking your questions during the next class or office hours, and keeping the homework organized in a loose-leaf notebook according to the homework guidelines. Your homework assignments for each test must be turned in at the time of the test and will be graded on a scale of 0 - 8.

**Daily Quizzes:** You will receive one point for the daily quiz each day you attend class and turn in an attempt at the quiz problem. For any quiz, a grade may be given, as an indication of how correct the method and solutions are. But, as far as your average, each quiz counts one point if you're present and tried the problem(s). These daily quizzes may not be made up if missed, either because you were absent or tardy.

**Projects:** Five projects will be assigned. Most of these require work with the graphing calculators or graphing software. You may work with others, but each of you must turn in a
separate paper. There is a moderate amount of repetition from one project to the next, in order to reinforce your mastery of the techniques. Do not spend much time on an individual project. Do not spend time being "stuck". Ask questions!! The first two projects can be done as early in the semester as you wish and the rest can be done at any point after you have learned the material through the beginning of chapter 4. Projects will not be accepted late, but may be turned in early. The first four projects are worth 8 points each and the fifth is worth 10 points. The first four projects are included in this handout. The fifth project has some choice. If you want to read about it early, check the "Projects" section of the course web pages.

**Grade on Homework/Daily Quizzes/Projects:** The total number of possible points on homework/quizzes/projects is 106. At most 100 points will be counted. This is a very liberal allowance for absences.

**Tests:** Tests will be in class. Make-up work will be in the Testing Center. (You will need your ACC student ID and a picture ID, like your driver's license, to use the Testing Center.) Tests must be done entirely on your own, with no help from anyone else. Violating the rules of the testing center or giving or receiving help on tests is scholastic dishonesty, and the punishments are severe.

If you miss a test (for an acceptable reason) or make a low grade on a test for Tests 1 - 3, you will be provided with an opportunity to make up that grade, up to an 80. **This may be done for one test.** However, if you do it for one test and then decide you would rather use the opportunity for a later test, you will be allowed to do that. The make-up tests will 80 points on them. They will have problems very similar to some of those on the regular test, but with different trig functions and different numbers. If you really do test corrections for the original test seriously and learn to work those problems, you should be able to do well on the make-up test. To earn an 80, you must get all problems on the make-up test correct. No make-up work will be provided for Test 4, which is the final exam. You may review make-up tests after they are graded, but they will not be returned to you.

**V. Class Rules:**

1. In accordance with school policy, you may not bring food or drink into class.
2. Please turn off or mute volume on beepers and cellular phones so as not to disrupt class.
3. Arrive for class a few minutes early so that you can have your materials out and be ready to start class on time.
4. Disruptive behavior (talking to others while I am lecturing, rudeness, etc.) will not be tolerated.
5. Class discussion will focus on the material being presented and will be about matters relevant to the entire class. Discussion of your individual situation belongs in office hours or, occasionally, in the part of the class time that I have identified as devoted to working individually with students.
6. Children are not allowed to attend class with you.
7. Remember you are here to learn; be prepared to participate in class discussion. We are all unique individuals and in this class everyone's opinion will be respected whether we agree or disagree.
8. Counseling services are available to help you with a variety of needs, if you would like more information please ask.
9. Office hours are available -- regularly scheduled and by appointment. Ask immediately if you need help! I am here to help you learn. Getting behind even one day will cause you to be
confused and frustrated. Getting behind more than a couple of days is likely to cause you to fail. Don't let that happen!!

10. Quiz problems will never be accepted late. A moderate amount of extra credit is available to everyone.

11. Tests may not be taken late. Flexibility to allow for one missed test is incorporated in the testing scheme.

12. All students must take the final exam at the scheduled time. There are no exceptions.

13. If you enroll in the class late, you are subject to the same rules as students who enrolled in the class before the class began. The standard grading scheme allows enough flexibility for all students to make up a reasonable number of absences.

14. Cheating will not be tolerated.

15. Remember that April 21, 2000 is the last day to withdraw from (or be reinstated in) a class.

VI. Homework Guidelines

As you do your homework, keep a record of your work on a cover sheet. Put all the sections in one chapter on one cover sheet. List all the problem numbers in the assignment for each section and put a symbol beside each to indicate your progress.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>check</td>
<td>I did it without help and it was correct.</td>
</tr>
<tr>
<td>check H</td>
<td>I had help, but I did it correctly.</td>
</tr>
<tr>
<td>X</td>
<td>I got it wrong and never did find out how to do it correctly.</td>
</tr>
<tr>
<td>OK</td>
<td>I didn’t have time to do it, but I’m sure that I could have done it correctly.</td>
</tr>
<tr>
<td>blank</td>
<td>I just didn’t get it done.</td>
</tr>
</tbody>
</table>

All the cover sheets should be together at the beginning of the assignment, and the actual problem solutions, in order, following the set of cover sheets.

Grading: The following factors will be considered in assigning a grade.
1. Is the required cover sheet provided on top? (All cover sheets for all sections in the assignment should be on top.)
2. Are the ratings on the cover sheet correct and honest?
3. Is the homework reasonably complete?
4. Is the work shown on the solutions, not just the answer?
5. Is the work for each solution organized reasonably, so that it is easy to follow?
6. Are the questions that you had while working the problems clear, and clearly answered?
7. Is it submitted in a notebook or folder, with no other material, with the problems labeled by chapter and section, and with everything in order, so that it is easy to find each part of the assignment?
What Students Need to Know by Memory in Trigonometry

Following is a list of facts that students in all sections of trigonometry should memorize. During tests students will not be allowed to use notes or cards listing these, but should recall them by memory alone.

1. Definitions:
   \[
   \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} \quad \csc \theta = \frac{1}{\sin \theta} \\
   \cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} \quad \sec \theta = \frac{1}{\cos \theta} \\
   \tan \theta = \frac{\text{opposite}}{\text{adjacent}} \quad \cot \theta = \frac{1}{\tan \theta}
   \]

2. The Pythagorean identities:
   \[
   \sin^2 \theta + \cos^2 \theta = 1 \\
   1 + \tan^2 \theta = \sec^2 \theta \\
   1 + \cot^2 \theta = \csc^2 \theta
   \]

3. The numerical values of the sin, cos, and tan of those angles (whether the angle is given in degrees or radians): \(\left\{0, \frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{\pi}{2}, \pi, \frac{3\pi}{2}\right\}\)

4. The arc length formula: \(s = r\theta\).

5. The double-angle formulas:
   \[
   \sin(2A) = 2\sin A \cdot \cos A \\
   \cos(2A) = \cos^2 A - \sin^2 A \\
   \cos(2A) = 2\cos^2 A - 1 \\
   \cos(2A) = 1 - 2\sin^2 A
   \]

6. Half-angle formulas:
   \[
   \sin A = \pm \sqrt{\frac{1 - \cos(2A)}{2}} \\
   \cos A = \pm \sqrt{\frac{1 + \cos(2A)}{2}}
   \]

7. The sum and difference formulas:
   \[
   \sin(A \pm B) = \sin A \cdot \cos B \pm \sin B \cdot \cos A \\
   \cos(A \pm B) = \cos A \cdot \cos B \mp \sin A \cdot \sin B
   \]

8. The graphs of the six trig functions. (Most important: the three main ones.)

9. The Law of Sines: \(\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}\).

10. The Law of Cosines: \(a^2 = b^2 + c^2 - 2bc \cos A\).
PREREQUISITE REVIEW for MATH 1316 Trigonometry

There is little to no algebra review in trigonometry class. The algebra needed is mainly high school Algebra II or Intermediate Algebra. A similar set of problems, with answers, is available on the web, from http://www2.austin.cc.tx.us/mparker/prereqd/. Work with other students in the class if you'd like. Ask the instructor during office hours or the tutors in the Learning Lab for help in answering your questions.

If you work all of these problems, showing your work, turn this in on or before Thursday, January 27, and have at least 14 of them correct, you'll earn 5 points extra credit on Test 1.

1. Solve for $x$: $5x + 2 = 8x - 6$

2. Solve for $x$: $2x - 7 + x = 4(x + 1) - 5$

3. Solve for $x$: $x^2 - x = 6$

4. Solve for $x$: $\frac{x^2(x-3)}{x^2-4} = 0$

5. Solve for $F$: $C = \frac{5}{9}(F - 32)$

6. Solve for $b_1$: $A = \frac{h(b_1 + b_2)}{2}$

7. If $f(x) = x^2 + 3$, find $f(4)$ and $f(7+b)$

8. Solve for $x$: $\frac{x}{x+1} - \frac{3}{x+2} = \frac{3}{(x+2)(x-1)}$

9. Graph $y = x^2 + 3$

10. Simplify: $\frac{(x+y)^2}{\frac{1}{x} + \frac{1}{y}}$

11. Simplify: $\frac{(-3x^{\frac{1}{2}})^3}{x^{\frac{5}{2}}}$

12. Solve this system of equations: $5x + 4y = 8$

13. Find the distance between the points (4,5) and (2,-6).

14. Write the equation of a circle with radius 5 and center (-4,6).

15. How long is a guy wire reaching from the top of a 15-foot pole to a point on the ground 9 feet from the pole?
Homework Assignments for MATH 1316

Sometimes in trigonometry classes, students find it easy to do the homework and difficult to do the same problems on tests. How you think about the homework as you are doing it has a major impact on how well you will be able to demonstrate your knowledge on tests. As you do the problems, keep in mind how the instructions and the problem itself tell you what method to use. Don't rely on, "It must be done like this because that's how the examples in this section were done."

While you are expected to check your answers, be careful about your reliance on the answers in the back and the Student Solution Manual. Keep track of any problems you don't get right the first time and make sure to do similar problems at least three times (spread apart in time) after you learn to work them correctly without help.

As you're doing homework, fairly frequently you should pick a set of 5 or 10 problems from several sections of the book, do them like a test, and grade yourself. You should definitely do the problems from the review sections in this manner. This is a very important technique to motivate yourself to learn to choose your techniques correctly, do the problems more quickly, and to develop confidence in your solutions (that doesn't depend on seeing the answer in the back.)

Several practice tests (sets of review problems) will be provided for each test. These are available from the web page for the course, too. The test will not follow these practice tests exactly (indeed, the practice tests differ from each other.) The tests may include problems of any type in the homework.

1.1*: 19, 21, 41, 45, 51, 71, 73, 75, 77, 79, 83, 85, 89
1.2*: 1, 2, 3, 4, 7, 11, 13, 17, 19, 25, 27, 31, 39, 43, 47, 53, 57, 59, 61, 79, 83
1.3*: 1, 3, 5, 11, 13, 15, 17, 21, 23, 25, 27, 37, 39, 41, 45, 51, 57, 67, 69
1.4: 1, 3, 5, 7, 9, 13, 14, 15, 17-24, 33, 35, 37, 39, 41, 47 - 50
1.5: 1, 2, 3, 5, 7, 9, 11, 14, 15, 16, 23, 25, 29 - 37, 39, 41, 47, 49, 51, 53, 55, 57 - 59, 63, 67, 69, 71, 75, 77, 79, 83, 85, 89, 92
Ch. 1 Review: 7, 11, 15, 17, 19, 25, 27, 39, 40, 47, 58, 65, 69

2.1: 1, 13, 20, 21, 23, 27, 29, 35 - 46, 47, 52 - 59, 63, 64
2.2: 5 - 8, 11 - 17, 21, 31 - 38 (in class), 41 - 47, 51, 53, 54
Handout -- Solving Trig Equations, part I: Choose six problems and do them.
2.3: 1, 3, 5, 7, 17, 21, 28, 29, 31, 37, 39, 43, 47, 49, 51, 57, 62, 64 at 0 & 1 & 2.5 & 4, 65a
2.4: 1, 5, 7, 9, 11, 17, 19, 23, 39, 41, 57
2.5: 1, 3, 7, 13, 15, 16, 17, 19, 21, 23, 29
Take at least one of the practice tests as a test and grade it. Include that with your homework to turn in. (And, depending on how you like that grade, study more!)

3.1: 5, 11, 13, 21, 23, 27, 29, 35, 37, 45, 47, 49, 50, 57-75, 76, 77, 79
3.2: 1, 3, 7, 11, 13, 15, 17-19, 25, 27, 35, 39, 43, 45, 47, 49, 53
Handout -- Solving Trig Equations, part I: Choose six problems and do them.
3.3:  1, 3, 5, 7, 9, 11, 13, 19, 21, 25, 29, 31, 35, 39, 41, 43, 52, 53, 55, 57, 61, 65, 68
3.4:  1, 3, 5, 9, 13, 17, 21, 23, 27, 29, 31, 35, 37, 41, 43
Ch. 3 Review:  7, 21, 27, 31, 38, 45, 51, 56, 63

4.1:  1, odd 9 - 27, all 29 - 37, 41, 44, 49, 51
Handout -- solving Trig Equations, part I:  Choose six problems and do them.
4.2:  1 - 3, all 5 - 15, odd 17 - 43, 47, 49, 55
4.3:  2, 5, 7 - 12, 23, 25, 27, 33, 34, 35, 37, 45, 47
Take at least one of the practice tests and grade it.  Include that with your homework.

5.1:  1,2,4,5,9,11,12,15,17,19,23-27,35,37,41,47,55,57,59,61
5.2:  1,3,5,13,15,17,19,21,33,35,39,41,43,45,49,53,55
5.3:  1,3,7,9,13,27,29,33,35,37,39,47,49,52,53,55,63,65,73,80
5.5:  1,5,9,13,17,19,21,23,25,29,35,39,43,45,51,55,59,63,67,71,77
5.6:  3,9,11,15,21,23,25,29,31,33,35,39,49,51,55,57
Ch. 5 Review:  33, 37, 45, 59

6.1:  5-20, 29-32,37,38,43,45,47,52a,53,54,55,57,59,61,63,65,
       69,71,73,75,81,83,85,87,89,93
6.2:  1,7,9,11,13,15,17,19,21,23,25,29,31,35,39,41,43,47,56,59
6.3:  5,7,15,17,19,21,23,25,31
6.4:  5,7,9,11,15,17
Take at least one of the practice tests as a test and grade it.  Include that with your homework.

7.1:  3,7,9,15,27,29, 37,41
7.2:  3,5,7,9,13,27
7.3:  3,5,7,17,25,27,29,35,37
7.4:  3,4,7,10,11,13,18,19,27,33,45,51,53,55,65,67,71
7.5:  1,3,5,7
Ch. 7 Review:  35, 47, 55

8.1*:  1,2,3,4,21,25,41,53,57,61,67,75,76
8.2:  3,5,9,11,15,20,21,25,27,29,31,33,35,37,39,47,49,51,53,59,60,61,63
8.3  1, 7, 13, 19, 27
8.4:  1,5,13,15,29,33,34,36,39,41,45
8.5:  1,3,5,7,9,11,15,19,21,23,37,41,43,47,53,55
8.6:  1, 3, 7, 9, 11
Take at least one of the practice tests as a test and grade it.  Include that with your homework.