# MATH 1316 Trigonometry

## Session: Spring 2005

| Section: 1316.005 | Office Hours: MW 4:35 – 5:35 p.m. RVS 8131  
(On the first Wednesday of each month, office hours begin at 5:15 p.m.)  
TTh 10:00 a.m. – 10:30 a.m. NRG 2147  
TTh 12:45 – 1:15 p.m. NRG 2147  
TTh 2:45 – 3:15 p.m. NRG 2147 |
| Synonym: 22750 | By appointment: (Email at least a day in advance to ask for an appointment)  
MW 4:05 – 4:35 p.m. RVS 8131  
Mon 7:00 – 8:00 p.m. RVS, room as agreed upon.  
TTh 9:15 – 10:00 a.m. NRG 2147  
TTh 12:00 – 12:45 p.m. NRG 2147 |
| Time: TTh 10:35 – 11:50 a.m. | Additional times for appointments may be available for students who cannot attend these and for whom email and phone conversations have proved to be inadequate to resolve problems. |
| Classroom: PB 03 |  |
| Instructor: Dr. Mary Parker |  |
| Office Number: NRG 2147 |  |
| Office Phone: 223-4846 |  |
| (fax 478-6814. Ask by email for permission before sending a fax.) |  |
| Email: mparker@austincc.edu |  |
| Web: http://www.austincc.edu/mparker/1316 |  |

## COURSE DESCRIPTION

**MATH 1316 TRIGONOMETRY (3-3-0).** This course is designed for students majoring in mathematics, science, engineering, or certain engineering-related technical fields. Content includes the study of trigonometric functions and their applications, trigonometric identities and equations, vectors, and the complex number system. Prerequisites: One semester of high school precalculus or trigonometry or MATH 1314 or its equivalent or recent completion of ACC's MATD 0390 with a B or better or satisfactory score on the ACC Assessment Test. Prior to the 1977-78 catalog, trigonometry was numbered MTH 1643. Credit can be earned for either MATH 1316 or the older trigonometry course, but not both. (MTH 1753)

### Checking the Prerequisite:
The homework assignment on the prerequisite material should be completed no later than the third day of the semester so that you can move to a lower course if needed.

### REQUIRED TEXT:
*Trigonometry*, by Lial, Hornsby and Schneider, 8th edition

### OPTIONAL:
Student Solution Manual

**SYLLABUS:** Chapters 1 – 8, with the last two sections of Chapter 8 optional.

The department requires that students be able to use these without notes: basic trig definitions; Pythagorean identities; quotient identities; values of trig functions at all quadrantal angles and angles with reference angles of 30°, 45°, or 60°; arc length formula; all six basic trig graphs; for sine and cosine functions: all sum and difference and double angle formulas; the law of sines; and the law of cosines.

### DEPARTMENTAL STATEMENT ABOUT CALCULATORS:
Students need either a scientific or business calculator. If a student cannot purchase one, calculators are available from the library. Graphing calculators are NOT required, but you will use graphing technology in some sections of the book. Most ACC faculty are familiar with the TI family of graphing calculators. Hence, TI calculators are highly recommended for student use. Other calculator brands can also be used. Your instructor will determine the extent of calculator use in your class section.

### CALCULATORS IN THIS CLASS:
You should bring a calculator with trig functions (some cost around $7) to class every day. I encourage the use of free computer software instead of a graphing calculator. You will need to choose which graphing technology you plan to use within the first week of the semester and start to use it in the second
week. I will be able to answer questions about Winplot and the TI-83. If you have a different graphing calculator, bring your Manual when you have questions and I’ll help you find what you need.

**INSTRUCTIONAL METHODOLOGY:**
This course is taught in the classroom as a lecture/discussion course. Classroom lectures/discussions will go quickly over the prerequisite and introductory material in order to have time to adequately discuss the harder material. Students are encouraged to skim each chapter before it is covered in class and practice a few of the beginning problems in each section by following the examples.

**COURSE RATIONALE**
This course, intended for mathematics, science, and engineering majors, is designed to prepare students for the calculus sequence. The six trigonometric functions are studied with the goals of developing a deeper understanding of both general function behavior and periodic function behavior, exploring those applications that have trigonometric models, and acquiring further proficiency with symbol manipulation.

**Next courses:**
MATH 1316 Trigonometry to MATH 2412 Precalculus to MATH 2413 Calculus I

**DEPARTMENTAL COURSE OBJECTIVES:**
1. Compute the values of the six trigonometric functions for key angles measured in both degrees and radians.
2. Graph all six trigonometric functions and their transformations.
3. Use the basic trigonometric identities to verify other trigonometric identities.
4. Solve trigonometric equations.
5. Solve right and oblique triangles.
6. Represent complex numbers in trig form, and perform basic operations with them.
7. Use the concepts of trigonometry to solve applied problems.

**INSTRUCTOR COURSE OBJECTIVES:**
8. Use graphing technology to do the following for a rectangular coordinate system: (a) enter a function correctly (exponents, trig functions, correct use of parentheses, etc.); (b) graph it; (c) change the visible domain and range as needed; (d) find the coordinates of any point on the graph; and (e) graph multiple functions on the same graph.
9. Use graphing technology to graph relationships given in polar coordinates.
10. Use graphing technology to graph relationships given in parametric equations.

**CALENDAR WITH TESTING SCHEDULE:**

<table>
<thead>
<tr>
<th>week</th>
<th>Dates</th>
<th>Sections</th>
<th>week</th>
<th>Dates</th>
<th>Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 11-13</td>
<td>Prereq. Review*, 1.1*, 1.2*, 1.3</td>
<td>9</td>
<td>Mar. 8-10</td>
<td>5.3, 5.4, 5.5</td>
</tr>
<tr>
<td>2</td>
<td>Jan. 18-20</td>
<td>1.4, Supplement, 2.1, 2.2</td>
<td>10</td>
<td>Mar. 22-24</td>
<td>5.6, 6.1</td>
</tr>
<tr>
<td>3</td>
<td>Jan. 25-27</td>
<td>2.3, Supplement, 2.4</td>
<td>11</td>
<td>Mar. 29-31</td>
<td>6.2, 6.3</td>
</tr>
<tr>
<td>4</td>
<td>Feb. 1-3</td>
<td>2.5, 3.1, 3.2</td>
<td>12</td>
<td>Apr. 5-7</td>
<td>6.4, 7.1, 7.3</td>
</tr>
<tr>
<td>5</td>
<td>Feb. 8-10</td>
<td>Test 1 (through ch 2), 3.3, Supplement</td>
<td>13</td>
<td>Apr. 12-14</td>
<td>Test 3 (through Ch. 6) 7.2, 7.4</td>
</tr>
<tr>
<td>6</td>
<td>Feb. 15-17</td>
<td>3.4, 4.1, 4.2</td>
<td>14</td>
<td>Apr. 19-21</td>
<td>7.5, 8.1*, 8.2, 8.3</td>
</tr>
<tr>
<td>7</td>
<td>Feb. 22-24</td>
<td>4.3, 4.4, 5.1</td>
<td>15</td>
<td>Apr. 26-28</td>
<td>8.4, 8.5, 8.6</td>
</tr>
<tr>
<td>8</td>
<td>Mar. 1-3</td>
<td>5.2, Test 2 (through Ch. 4)</td>
<td>16</td>
<td>May 3-5</td>
<td>Final Exam (through Ch. 8)</td>
</tr>
</tbody>
</table>

Please note: schedule changes may occur during the semester. Any changes will be announced in class.
GRADING:

Grades.

Daily quizzes/attendance: 14%
Homework: 14%
4 Tests: 72%

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.

Homework:

The purpose of doing homework is to learn the material well enough to internalize these ideas and methods and be able to use them several weeks later (and in later semesters.) As you do every homework assignment, keep that goal in mind.

You are responsible for reading the homework notes and Test Review notes BEFORE the class in which that material will be discussed. That will enable you to learn more from the class and ask questions about what you don’t understand.

After class, skim through the homework notes again and then do the assigned problems over the material covered that day before the next class period and check your solutions. You are responsible for 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 as described in the next section. 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 - 25.

Homework Guidelines

Students learn to work problems using short-term memory skills by listening/working in class and reading examples. As you do the homework after each class, you must practice enough to clarify how to do each type of problem. But it is also crucial that you engage long-term memory skills so that you will be able to use the techniques when they are needed later in the semester or on tests. My rules and guidelines are designed to help you do that.

Record your progress on each problem so that later you can recall quickly how well you understood it and what you might still need to do. As you do your homework, keep a record of your work ON EACH PROBLEM 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 symbols beside it to summarize your work. (Use several symbols on a problem if they are relevant.)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>I looked back at an explanation or example while doing this problem.</td>
</tr>
<tr>
<td>?</td>
<td>I have a specific question written on my solution and I need to ask for help.</td>
</tr>
<tr>
<td>H</td>
<td>I got help from a person (another student, tutor, or instructor) on this problem.</td>
</tr>
<tr>
<td>Check mark</td>
<td>I worked the problem and checked my answer and it was correct.</td>
</tr>
<tr>
<td>N</td>
<td>No answer in the back of the book. I still need to ask the tutor or teacher for the answer so that I can check it.</td>
</tr>
<tr>
<td>G</td>
<td>Needed graphing technology and didn’t have it with me at the time.</td>
</tr>
<tr>
<td>X</td>
<td>I got it wrong and haven’t yet found 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>
Both of the chapter 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 chapters/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? (You are NOT required to do all the easier problems in the listed homework in order to get a perfect grade. Do as many as you think you need in order to understand the material.)
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?
8. I will grade about 6 to 9 specific problems out of the two chapters. Each of those will count one point. Those will be chosen from the even-numbered problems or the problems in the last third of the problem list for a section of the text.

**Daily Quizzes/Attendance:** Each class day, attendance for the entire class period earns 2 points on this grade. In addition, a short take-home quiz, worth 3 points, is assigned each day and is due at the beginning of the following class. (No quiz is due on the first class day, of course, or on any of the four test days.) That gives a total of 145 points. A maximum of 120 points will be counted, so a student with five absences can still make a perfect grade. That is certainly more absences than any student should accumulate. The final total (capped at 120) will be divided by 120 for a percentage grade, which will be the daily quiz/attendance grade.

Students may not earn the attendance grade in ANY WAY except by actual attendance. Students who must miss class may earn the quiz grade if the quiz problems are received before the beginning of class by email or in the campus mailroom (where the time is recorded.) Do not send the quiz to class with another student.

Students who miss class may ask another student for the quiz assignment or obtain the quiz assignment for the next day from the course web page at http://acconline.austincc.edu/.

Students who miss class should come to my office hours very soon to ask their questions over the homework or to get any materials that were handed back during the class.

**Calculators and Software:** Most days you’ll do about 90% of the work in the course without a calculator and 10% with a calculator. Follow the models in class and in the textbook to determine which problems should be done without calculators. (One clue: when the problem asks for “exact solutions” it should be done without a calculator.) Calculators will NOT be allowed on Tests 2 and 3. Even on Tests 1 and 4, more than 2/3 of the problems will not require any calculator use. For the calculator problems on the tests, a scientific calculator is adequate. If all you have is a graphing calculator, you may use it during class on Tests 1 and 4, but you may NOT use it on the make-up test in the Testing Center. **You do not have to buy a graphing calculator.** 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://www.austin.cc.tx.us/mparker/1316/. Some work with graphing technology is required in the homework or quizzes.

**Tests:** Tests will be in class. The one make-up test 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 one of Tests 1, 2, or 3, you may earn the right to replace that test grade with the grade earned on the NEXT test. You may earn this right by reworking the ENTIRE set of test problems correctly and turning it in before the following test.

One make-up test will be provided in the Testing Center, covering 1.1 through 5.2. It may be used to replace the Test 1 or Test 2 grade and must be taken no later than the end of the 11th week of the semester (Spring 2005: no later than April 1.)

**INCOMPLETE GRADES**  Incomplete grades (I) will be given only in very rare circumstances. Generally, to receive a grade of "I", a student must have taken all examinations, be passing, and after the last date to withdraw, have a personal tragedy occur which prevents course completion.

**ATTENDANCE POLICY**  Attendance is required in this course. Students who miss more than 4 classes may be withdrawn.

**WITHDRAWAL POLICY**  It is the student's responsibility to initiate all withdrawals in this course. The instructor may withdraw students for excessive absences (4) but makes no commitment to do this for the student. After the withdrawal date (Spring 2005: April 18, 2005), neither the student nor the instructor may initiate a withdrawal.

**REINSTATEMENT POLICY**  In order to be reinstated, the student must demonstrate that he is caught up with the required work as of the date on which he wishes to be reinstated. This must be done before the official last date to withdraw for the semester.

**TESTING CENTER**  ACC Testing Center policies can be found at: [http://www.austincc.edu/testctr/](http://www.austincc.edu/testctr/).

**COURSE-SPECIFIC SUPPORT SERVICES**  ACC main campuses have Learning Labs which offer free first-come first-serve tutoring in mathematics courses. Students should bring their text, course handouts, and notes when they come to the Learning Lab. The locations, contact information and hours of availability of the Learning Labs are available from [http://www2.austincc.edu/rvslab/ll.html](http://www2.austincc.edu/rvslab/ll.html).

**ADDITIONAL COURSE POLICIES:**

- **Students with Disabilities:** Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office of Students with Disabilities on the campus where they expect to take the majority of their classes. Students are encouraged to do this three weeks before the start of the semester. Students who are requesting accommodation must provide the instructor with a letter of accommodation from the Office of Students with Disabilities (OSD) at the beginning of the semester. Accommodations can only be made after the instructor receives the letter of accommodation from OSD.

- **Scholastic Dishonesty:** Acts prohibited by the college for which discipline may be administered include scholastic dishonesty, including but not limited to, cheating on an exam or quiz, plagiarizing, and unauthorized collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, work, research or self-expression. Academic work is defined as, but not limited to, tests, quizzes, whether taken electronically or on paper; projects, either individual or group; classroom presentations; and homework.
Students who violate the rules concerning scholastic dishonesty will be assessed an academic penalty in keeping with the seriousness of the offense, in the opinion of the instructor. This academic penalty may range from a grade penalty on the particular assignment to an overall grade penalty in the course, including possibly an F in the course. ACC’s policy on student discipline is in the Student Handbook and on the web on p. 33 of http://www.austincc.edu/marketing/handbook/student_handbook_02-03.pdf.

- **Academic Freedom:** Institutions of higher education are conducted for the common good. The common good depends upon a search for truth and upon free expression. In this course the professor and students shall strive to protect free inquiry and the open exchange of facts, ideas, and opinions. Students are free to take exception to views offered in this course and to reserve judgment about debatable issues. Grades will not be affected by personal views. With this freedom comes the responsibility of civility and a respect for a diversity of ideas and opinions.

- **Student Discipline:** Classroom behavior should support and enhance learning. Behavior that disrupts the learning process will be dealt with appropriately, which may include having the student leave class for the rest of that day. In serious cases, disruptive behavior may lead to a student being withdrawn from the class. ACC's policy on student discipline can be found in the Student Handbook or on the web at http://www.austincc.edu/marketing/handbook/student_handbook_02-03.pdf, page 32.

- **Student Services**
  The web address for student services is: http://www3.austin.cc.tx.us/evp.css/rss/Default.htm
  The ACC student handbook can be found at: http://www3.austincc.edu/evpcss/handbk/toc.htm

**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. 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. And it is very difficult to catch up after getting behind much more than one day. 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. Make-up options are provided for missing one of Tests 1-3.
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.