MATH 1316 Trigonometry*
Session: Spring 2008

Section: 1316.002 **Synonym**: 13043 Time: MW 12:45 – 2:00 p.m. Classroom: NRG 42245	**Office Hours**: MW 10:00 – 11:00 a.m. NRG 2147 MW 2:00 – 2:30 p.m. NRG 2147 MW 4:35 – 5:35 p.m. RVS 8131 (no phone)
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	**By appointment**: (Email at least a day in advance to ask for an appointment) MW 11:00 a.m. – 12:45 p.m. NRG 2147 MW 4:05 – 5:05 p.m. RVS 8131 (no phone) Mon 7:00 – 7:30 p.m. RVS, room as agreed upon. 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.

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, polar coordinates and equations, and parametric equations. Prerequisites: MATH 1314 with a C or better. A second option is an appropriate secondary school course (one semester of precalculus or trigonometry) and a satisfactory entrance score on ACC's Mathematics Assessment Test. A third option is an appropriate higher score on ACC's Mathematics Assessment Test. (MTH 1753) Course Type: T

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 TEXTS/MATERIALS
Text: *Trigonometry*, by Lial, Hornsby and Schneider, 8th edition (ISBN 0-321-22736-0)

Optional materials:
- MyMathLab online software (includes an electronic version of the text, multimedia learning aids such as videos and animations, and practice tests that generate a personalized study plan) To use MyMathLab, you'll need your own access number and the Course ID. Students in MATH 1316 who use this software use the course IDacc45960.
- Student Solution Manual, 8th ed. (ISBN: 0-321-22743-3)

   Purchase options:
- Purchase the required textbook alone, either used or new, from a local bookstore.
- The publisher provides a **value package to the bookstores for the same price as the new textbook alone**. The value package includes a new copy of the required text, the Student Solution Manual, MyMathLab software, a review of algebra, and a digital video tutor. These will be available in the local bookstores. The ISBN for this package is 0-321-29471-8
- MyMathLab can be purchased alone online for $52.50 from http://www.mymathlab.com/buying.html

* More information about ACC mathematics courses is available at http://www.austincc.edu/math/

SYLLABUS:
Chapters 1 – 8, with the first four sections of Chapter 8 optional.
Students must 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 30^0, 45^0, or 60^0; 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.

CALCULATORS IN THIS CLASS:
Bring a calculator with trig functions to class every day. Some acceptable calculators cost as little as $7. You are required to use graphing technology in some sections of the text. Some free computer software is available or you may use a graphing calculator for those problems.   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 Texas Instruments 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. Plot points and graph equations in the polar coordinate system.
7. Graph pairs of parametric equations.
8. Use the concepts of trigonometry to solve applied problems.

INSTRUCTOR COURSE OBJECTIVES:
9. 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.
10. Graph relationships given in polar coordinates both by hand and with graphing technology.
11. Graph relationships given in parametric equations both by hand and with graphing technology.

CALENDAR WITH TESTING SCHEDULE:

week	Dates	Sections	week	Dates	Sections
1	Jan. 14-16	Prereq. Review*, 1.1*, 1.2*, 1.3	9	Mar. 17-19	5.3, 5.4, 5.5
2	Jan. 23	1.4, Supplement, 2.1	10	Mar. 24-26	5.6, 6.1
3	Jan. 28-30	2.2, Supplement, 2.3, 2.4	11	Mar. 31-Apr. 2	6.2, 6.3
4	Feb. 4-6	2.5, 3.1, 3.2	12	Apr. 7-9	6.4, 7.1, 7.3
5	Feb. 11-13	3.3, Supplement, Test 1 (through ch 2)	13	Apr. 14-16	Test 3 (through Ch. 6)
6	Feb. 18-20	3.4, 4.1, 4.2	14	Apr. 21-23	7.2, 7.4, 7.5
7	Feb. 25-27	4.3, 4.4, 5.1	15	Apr. 28-30	8.5, 8.6
8	Mar. 3-5	5.2, Test 2 (through Ch. 4)	16	May 5-7	Final Exam (through Ch. 8)

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

GRADING:

Grades.

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Daily quizzes/attendance: 14%

Homework: 14%

4 Tests: 72%

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

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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 just before 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.)

Symbol	Meaning
E	I looked back at an explanation or example while doing this problem.
?	I have a specific question written on my solution and I need to ask for help. (You should get that help within a day or two and then put another symbol along with this.)
H	I got help from a person (another student, tutor, or instructor) on this problem.
Check mark	I worked the problem and checked my answer and it was correct.
N	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.
G	Needed graphing technology and didn't have it with me at the time.
X	I got it wrong and haven't yet found out how to do it correctly.
OK	I didn't have time to do it, but I'm sure that I could have done it correctly.
blank	I just didn't get it done.

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.

(See the course web page at http://www.austincc.edu/mparker/1316 and follow the link to handouts to see an example of a filled-out cover page for your homework.)

Grading: The following questions will be considered in assigning a grade.
1. Are the required cover sheets 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 work shown on the solutions, not just the answer?
4. Is the work for each solution organized reasonably, so that it is easy to follow?
5. Are the questions that you had while working the problems clear, and clearly answered?
6. Did you do all the even-numbered problems and all the problems in the last third of the problem list for that section? (I will grade about 6 to 9 specific problems out of the two chapters. Each of those will count one point, so that accounts for about 1/3 of the overall grade.)
7. 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. Whether it is enough will be partly judged by your performance on similar problems on the test.)
8. 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?

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 140 points. A maximum of 120 points will be counted, so a student with four absences can still make a perfect grade. 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 obtain 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 2008: no later than April 3.)

Grade reporting: You will receive your papers back in class with grades on them. Your final course grade will be posted at http://acconline.austincc.edu/ at the end of the semester.

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. Students who have an I must communicate with the instructor by email at least twice each week until the I is completed.

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.
Before the official census date (Spring 2008: Jan. 29, 2008), a withdrawal from this course will take the course entirely off the transcript and no W will appear, so it doesn't count as a withdrawal. Between then

and the final withdrawal date (Spring 2008: April 21, 2008), withdrawals do result in a W on the transcript. After that date, neither the student nor the instructor may initiate a withdrawal.
Students entering a Texas public college or university starting Fall 2007 and later are allowed only a very limited number of withdrawals (i.e. Ws on their transcripts) during their entire undergraduate career. For all students, withdrawals can have negative consequences, including increasing the tuition to be paid when the course is taken again and eligibility for financial aid. Review this and other important information about withdrawals at http://www.austincc.edu/withdraw/

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/ .

COURSE-SPECIFIC SUPPORT SERVICES: Sometimes sections of MATH 0155(1-0-2) are offered**.** This lab is designed for students currently registered in Trigonometry MATH 1316. It offers individualized and group setting to provide additional practice and explanation. This course is not for college-level credit. Repeatable up to two credit hours.
ACC main campuses have Learning Labs which offer free first-come first-serve tutoring in mathematics courses. At NRG it is in room 4119.   Students should bring their text, course handouts, and notes when they come to the Learning Lab. For locations, contact information and hours of availability of the Learning Labs, see http://www.austincc.edu/tutor/ .

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 that the instructor determines is in keeping with the seriousness of the offense. 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 can be found in the Student Handbook under Policies and Procedures http://www.austincc.edu/handbook

- **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. This means that students must take turns speaking, listen to others speak without interruption, and

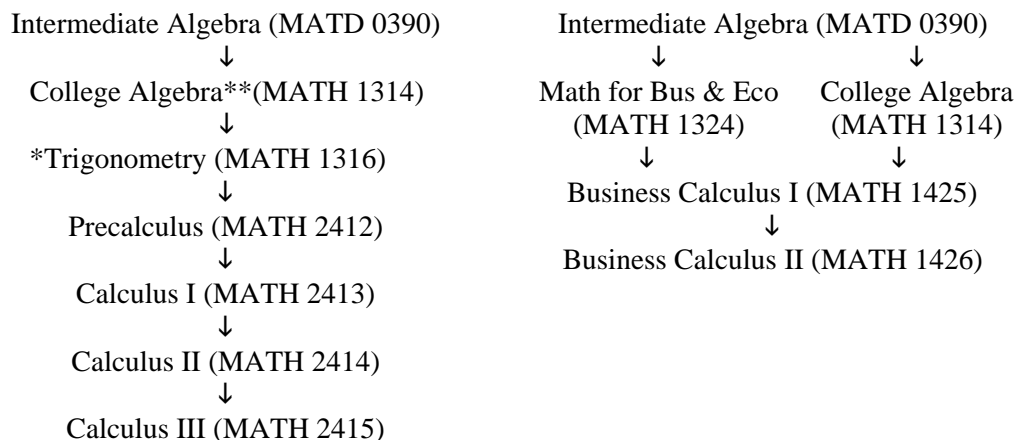refrain from name-calling or other personal attacks.

- **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/handbook/

- **Student Services:** 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 under Policies and Procedures or on the web at: http://www.austincc.edu/handbook

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 on quizzes is available to everyone. This is adequate to take care of a reasonable number of absences without a grade penalty.
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.

Prerequisites for Calculus

There are two calculus sequences at ACC (and at most colleges) -- Business Calculus and Calculus. The prerequisite sequence is different for these. Depending on background, students may start the prerequisite sequence at different places

Intermediate Algebra (MATD 0390)   Intermediate Algebra (MATD 0390)
↓   ↓   ↓
College Algebra**(MATH 1314)   Math for Bus & Eco   College Algebra
↓   (MATH 1324)   (MATH 1314)
*Trigonometry (MATH 1316)   ↓   ↓
↓   Business Calculus I (MATH 1425)
Precalculus (MATH 2412)   ↓
↓   Business Calculus II (MATH 1426)
Calculus I (MATH 2413)
↓
Calculus II (MATH 2414)
↓
Calculus III (MATH 2415)

Where to start: The only way that students may skip courses in a sequence is to begin higher in the sequence, based on current knowledge of material from high school courses.
1. A student who needs a review of high school Algebra II will start in Intermediate Algebra (or below.)
2. A student who completed high school Algebra II, but no higher, and whose assessment test score indicates that he/she remembers that algebra, will start in College Algebra or Math for Business & Economics. A substantially higher assessment test score enables the student to start in Trigonometry.
3. A student who completed some precalculus, elementary analysis, or trigonometry in high school, and whose assessment test score indicates that he/she remembers algebra, is eligible to start higher in the sequence than College Algebra. Check the catalog or the math web page.***

* The material in the Trigonometry course requires that students are quite adept with the skills from high school Algebra II (Intermediate Algebra). Some students will achieve that level of skill in the College Algebra course if their placement score is high enough, while others need an additional semester of work on algebra that is done in two courses, Intermediate Algebra and College Algebra.

** Some students who are very successful in College Algebra are tempted to skip either Trigonometry or Precalculus and enroll in Calculus I. That is **not acceptable**. Trigonometry topics are essential to success in Calculus, and while it is true that the topic list for Precalculus has only a few additions from the topic list for College Algebra, the level of sophistication of the presentation and the problems on all topics is greater in Precalculus. That increased sophistication is necessary for an adequate background for the Calculus sequence. ***

Notes about the Business sequence: Texas State University requires Math for Business and Economics and Business Calculus I. Students who will attend the UT College of Business must complete the entire Business Calculus sequence before transferring. For more information, including requirements for UT economics students, see http://www.austincc.edu/mthdept2/notes/1425.html

*** For additional information, including prerequisite review sheets for most courses, see http://www.austincc.edu/math/