

Syllabus - MATH 1321 – Trigonometry
Sections 20 & 22
Fall 2013

Instructor Information

Name: Dr. Dermot McCarthy

Office: Math Building Room 217

E-Mail: dermot.mccarthy@ttu.edu

Phone: (806) 834-0191

Office Hours: Tuesdays and Thursdays 9:45 am – 10:45 am and by appointment.

Webpage: www.math.ttu.edu/~mccarthy/m1321f13.html

Note: Outside of office hours the best way to contact me is via e-mail. Please include your full name and section number in any e-mail you send to me.

Course Information

Class Times: Section 20: TR 11:00 am – 12:20 pm, ENGPL 163

Section 22: TR 12:30 pm – 1:50 pm, ENGPL 151

Prerequisites: a grade of C or better in MATH 1320 or MATH 1420; or

a test score of at least 610 on the SATM; or

26 on the ACTM; or

4 on Math Placement code.

Textbook: *Trigonometry 10th Edition* by Lial, Hornsby, and Schneider; published by Pearson

Course Description and Purpose

This course is designated for a wide student body population. It fulfills a set of learning objectives as established by the Texas Higher Education Coordinating Board for students whose major foundation is *not* a mathematical one, including but not limited to: architecture, arts, earth sciences, humanities, life sciences, pre-medical sciences, pre-engineering, construction technology. Topics include: trigonometric functions, trigonometric equalities, solving triangles, sine law, cosine law, triangle geometry. While technology may be used for class demos and practice, this is not a technology-based course, and the students should not be expected to use a calculator in class or during examinations

MATH 1321 satisfies part of the university Core Curriculum requirement in Mathematics; it is designed for a large range of majors, as specified in the previous paragraph.

General Course Objectives

1. Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Math 1321 provides students with the skills necessary to take Precalculus or Calculus as well as to prepare students for future courses within their chosen major. Critical thinking skills will be enhanced as students use scientific reasoning to identify, understand and apply mathematical concepts and information. In particular, students will develop skills to: (1) understand and use the

definitions of trigonometric functions; (2) understand and verify trigonometric identities; (3) understand vectors, operations, and the dot product; (4) graph trigonometric functions with understanding of translations, polar equations; (5) interpret information given by graphs including intercepts, domain, and range; (6) solve trigonometric equations and parametric equations; (7) use technology appropriately; (8) understand the unit circle; (9) understand when to use certain rules, properties, theorems, and formulas in the above learning outcomes; (10) model real world situations using right angle trigonometry, law of sines and cosines; (11) integrate appropriate terminology into their everyday language when discussing mathematics; (12) appraise their progress in thinking logically, increasing their mathematical confidence, and appropriate organizational skills for mathematics. Assessment of critical thinking skills will formally be conducted through the review and evaluation of homework assignments, in-class quizzes and formal examinations.

2. Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual

Communication skills will be developed as students learn to adequately communicate mathematical concepts, symbolic formulas and numerical results verbally, in writing and graphically. Students are required to write in response to homework assignments. They engage in oral communication through class discussions, and they learn methods of visual communication as they learn to interpret formulas, charts and graphs.

3. Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Empirical and quantitative skills will be enhanced as students will use creative skills to provide individual solutions to mathematical problems and interpret the results in a relevant manner. In particular, students will develop skills to: (1) understand and use the definitions of trigonometric functions; (2) understand and verify trigonometric identities; (3) understand vectors, operations, and the dot product; (4) graph trigonometric functions with understanding of translations, polar equations; (5) interpret information given by graphs including intercepts, domain, and range; (6) solve trigonometric equations and parametric equations; (7) use technology appropriately; (8) understand the unit circle; (9) understand when to use certain rules, properties, theorems, and formulas in the above learning outcomes; (10) model real world situations using right angle trigonometry, law of sines and cosines; (11) integrate appropriate terminology into their everyday language when discussing mathematics; (12) appraise their progress in thinking logically, increasing their mathematical confidence, and appropriate organizational skills for mathematics. Assessment of these developing skills will be conducted using homework assignments, in-class quizzes and examinations.

Course-Specific Learning Objectives And Corresponding Outcomes

1. Apply arithmetic, algebraic, geometric, statistical and/or logical reasoning to solve problems.

In Math 1321 students will develop skills to: (1) understand and use the definitions of trigonometric functions; (2) understand and verify trigonometric identities; (3) understand vectors, operations, and the dot product; (4) graph trigonometric functions with understanding of translations, polar equations; (5) interpret information given by graphs including intercepts, domain, and range; (6) solve trigonometric equations and parametric equations; (7) use technology appropriately; (8)

understand the unit circle; (9) understand when to use certain rules, properties, theorems, and formulas in the above learning outcomes; (10) model real world situations using right angle trigonometry, law of sines and cosines; (11) integrate appropriate terminology into their everyday language when discussing mathematics; (12) appraise their progress in thinking logically, increasing their mathematical confidence, and appropriate organizational skills for mathematics. Student mastery of problem solving skills will be assessed through homework exercises, in-class quizzes, and examinations.

2. Represent and evaluate basic mathematical and/or logical information numerically, graphically, and symbolically

In Math 1321 students will learn how to adequately communicate mathematical information in writing, verbally and graphically, by using words, numerical answers, algebraic expressions, logical sentences, as well as graphs and diagrams.

3. Use mathematical and logical reasoning to evaluate the validity of an argument.

In Math 1321 students will learn how to identify, understand and apply mathematical and logical reasoning to theoretical and applied problems. In particular, attention will be given to procedures for establishing of the validity of functional identities.

4. Interpret mathematical and/or logical models such as formulas, graphs, tables and schematics, and draw inference from them.

In Math 1321 students will learn to identify and interpret mathematical information contained in formulas, graphs and tables, in particular: (a) applied triangle problems; (b) harmonic motion; (c) vectors and applications to physical problems; (d) navigational applications. The development of student interpretative and inference skills will be assessed through homework exercises, in-class quizzes, and examinations.

College-Level Competency: Students graduating from Texas Tech University should be able to demonstrate the ability to apply quantitative and logical skills to solve problems. In particular, students who have taken Math 1321 will be able to use the course-specific learning objectives in order to provide individual solutions to mathematical problems and interpret the results in a relevant manner. The assessment of these skills will be conducted via embedded assessments in final exams, senior surveys (GSS) and senior assessments (OSA).

Learning Assessment

Learning outcomes will be assessed through homework exercises and examinations.

Homework: Homework will be assigned weekly, either on-line through the webwork system or as written assignments. Late homework will not be accepted.

In-class exams: There will be three in-class exams given throughout the semester. A tentative schedule for these exams is

Exam 1: Tuesday September 17

Exam 2: Tuesday October 15

Exam 3: Tuesday November 12

Final exam: A common final exam will take place for all sections on Wednesday December 11, 4:30 pm – 7:00 pm. The room for the final exam will be announced during the semester. The final exam is comprehensive, i.e., it will examine material from the entire course.

Grading

A student's overall percentile grade for the course will be calculated based on his/her percentile grade in each of the assessment categories described above, weighted as follows:

Homework	15%
In-class exams	45% (each worth 15%)
Final Exam	40%

Letter grades will then be assigned in accordance with the following correspondence:

Letter grade A = a percentile grade of 90% or higher

Letter grade B = a percentile grade of 80% or higher, that is lower than 90%

Letter grade C = a percentile grade of 70% or higher, that is lower than 80%

Letter grade D = a percentile grade of 60% or higher, that is lower than 70%

Letter grade F = a percentile grade lower than 60%

Civility In The Classroom

Texas Tech University endeavor to foster a classroom climate of mutual respect among students and between students and teacher. Mutual respect means that we should be tolerant of different ideas and varying opinions about topics of discussion in class, that we address each other respectfully and without interrupting while others are speaking, and that we do not engage in disruptive behavior in class. Signs of disrespect include, but are not restricted to: ringing cell phones (students must turn them off or leave them home), reading a newspaper or other material that is not part of a class assignment while in class, talking with classmates during class, eating and drinking in class, and similar disruptive behaviors. Students who engage in disruptive behavior will be warned. Repeated disruptive behavior may result in the student being asked to leave the classroom.

Academic Honesty

The TTU “Code of Student Conduct”, which you should have received when you enrolled in the university, contains a lengthy list of prohibited behaviors, among which is “Academic Dishonesty”. Please note that cheating and plagiarism (a form of cheating) are included among the actions that are subject to disciplinary action. Cheating will not be tolerated in this course. A student who is caught cheating will receive a grade of 0 on the exam, paper, or exercise. Awarding of a grade of F for the course is also a possible penalty. In addition, the incident of academic dishonesty will be reported to the Dean of the appropriate academic college for such disciplinary action as they see fit to administer.

Plagiarism: “The appropriation or imitation of the language, ideas, and thoughts of another author, and representation of them as one’s original work.” *The Random House College Dictionary*, revised edition. New York: Random House, 1975, p. 1014.

“1. The use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgement; 2. the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.” *Student Affairs Handbook*, Texas Tech University, Lubbock, Texas, 1998-99, p. 22.

Plagiarism and cheating are not tolerated and will result in a grade of 0 on work that contains plagiarized material. In addition, a grade of F may be awarded for the course. Any cases of cheating will be reported to the Honors College and the responsible academic dean (i.e., Arts & Sciences, Business Administration, Engineering, etc.)

Accommodation Of Students With Disabilities

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

Student Absences

Observation Of Religious Holy Days: A student who is absent from classes for the observation of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence if, not later than the fifteenth day after the first day of the semester, the student had notified the instructor of each scheduled class that the student would be absent for a religious holy day.

Officially Approved Trips and Excused Absences: A student who misses an examination or is unable to complete an assignment due to an officially approved trip or an excused absence (e.g. illness) will be allowed to make-up the missed examination or assignment within a reasonable timeframe thereafter. Students should notify the instructor of any such absences as soon as is possible. The student should be able to provide official evidence to support the reason for their absence (e.g. a doctor's note in the case of illness).

Unexcused Absences: Make-up of examinations or assignments will not be allowed in the case of unexcused absences.

Tentative Course Outline

Chapter 1	4 hours
Chapter 2	5 hours
Chapter 3	4 hours
Chapter 4	5 hours
Chapter 5	5 hours
Chapter 6	5 hours
Chapter 7	5 hours
Chapter 8 (omit 8.4)	5 hours
Review and testing.....	7 hours

45 hours