Fall 2013 Math 1321-18 Trigonometry

Instructor: Dr. Alexander Solynin	**Place:** MATH 017
Office Hours: M 2:00-3:50 T 4:00-5:00 W 2:00-4:00 or by appointment	**Text:** *Trigonometry 10th Edition by Lial, Hornsby, and Schneider; published by Pearson*
Office: MA 231	**Time:** 9:30-10:50 TT
Phone: (806) 834-7280	**Prerequisites:** 4 on MPE, 610 on SATM, or 26 on ACTM, or C in MATH 1320 or 1420 25
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About the Course: 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. We will cover **Chapters 1 –7**.

Calculators: While use of technology for class demos and practice is encouraged, this is not a technology-based course, and the students should not be expected to use a calculator in class. Time will not be spent in class on calculator instruction. **However, restricted usage of calculators may be allowed on the Final, and in-class Exams.**

Formula sheets: At least one class before the Final and in-class exams, I will provide students with a formula sheet valid for that particular exam. Students are not allowed to use their own formula sheets in class.

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.
Assessment Strategies: Final Exam will be created by the Course Coordinator in collaboration with the instructors/TAs.

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.
Assessment Strategies: A comprehensive list of Homework and Exam problems will be created by the Course Coordinator in collaboration with the instructors/TAs. It is expected that at least 25% of the problems on this comprehensive list will address this specific objective.
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.

Strategies: A comprehensive list of Homework and Exam problems will be created by the Course Coordinator in collaboration with the instructors/TAs. It is expected that at least 25% of the problems on this comprehensive list will address this specific objective.
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.
Assessment Strategies: A comprehensive list of Exam problems will be created by the Course Coordinator in collaboration with the instructors/TAs. It is expected that at least 25% of the problems on this comprehensive list will address this specific objective.
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).

General Policies:
In general, no missed in class exams and quizzes will be made up and no homework will be accepted after the deadline. Whether an absence is excused or unexcused is determined solely by the instructor with the exception of absences due to religious observance and officially approved trips described below.

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 STATEMENT: 27 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 ABSENCE FOR 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.

Absence due to officially approved trips: The Texas Tech University Catalog states that the person responsible for a student missing class due to a trip should notify the instructor of the departure and return schedule in advance of the trip. The student may not be penalized and is responsible for the material missed.

Important Dates:

Monday, August 26 – Classes begin.
August 29 - Last day to add a course.
Monday, September 2 – Labor Day Holiday.
September 12 - Last Day to Drop a Course without penalty.
October 28 - Last Day to Drop a Course.
November 27-December 1 – Thanksgiving Vacation.
November 26-December 5 – Period of no examinations.
Wednesday, December 4 - Last Day of classes.
Wednesday, December 11, 4:30 p.m.-7:00 p.m. **Final Exam.**

STUDENT EVALUATION:

- Final examination – comprehensive, course wide exam prepared by the course coordinator.

♦ **Wednesday, December 11, 4:30 p.m.-7:00 p.m**. **FINAL EXAMINATION** **180 pts**
This exam is scheduled before the semester begins.
Students should **eliminate any conflicts NOW.**

•**IN-CLASS EXAMS:** September 19, October 22, November 7 **3×100 = 300 pts**
Each exam consists of 8-12 problems

• 15 min **QUIZZES**: **7×20 = 140 pts**
Each 15 minute quiz consists of 2 problems**:** 2×10 = 20 pts

• **HOMEWORK**: I will collect homework seven times and I will grade 5-10 problems of these homework assignments.
Each homework is worth 20 pts: **7×20 = 140 pts**

• **Perfect attendance** (≤2 missed classes,
all excused absences must be supported by official notes). **30 pts**

• **MAXIMAL TOTAL:** **790 pts**

GRADING PROCEDURE:

A - 90 - 100%
B - 80 - 89%
C - 70 -79%
D - 60 - 69%
F - ≤ 59%

Course Calendar

Date	Textbook	Tentative Lecture Topics
Aug. 27	Sections 1.1, 1.2	Angles. Similar triangles.
Aug. 29	Sections 1.3., 1.4	Trig functions. Using the definitions.
Sep. 3**Q1**	Sections 2.1, 2.2	Trig functions of acute. Trig functions of non-acute angles.
Sep. 5	Sections 2.4, 2.5	Solving right triangles. Further applications.
Sep. 10	Section 3.1, 3.2	Radian measure. Applications of radian measure.
Sep. 12**Q2**	Sections 3.3	The unit circle and circular functions.
Sep. 17	Sections 3.4	Linear and circular speed.
Sep. 19	**Lecture Exam #1 covered Sections 1.1 – 3.4.**	
Sep. 24	Section 4.1, 4.2	Graphs of the Sine and Cosine functions. Translations.
Sep. 26	Section 4.3, 4.4	Graphs of the Tangent and Cotangent. Graphs of the Secant and Cosecant
Oct. 1**Q3**	Section 5.1	Fundamental identities.
Oct. 3	Section 5.2	Verifying trig identities.
Oct. 8	Section 5.3	Sum and difference identities for Cosine.
Oct. 10 **Q4**	Section 5.4	Sum and difference identities for Sin and Tangent.
Oct. 15	Section 5.5, 5.6	Double-angle identities.
Oct. 17	Section 5.6	Half-angle identities.
Oct. 22	**Lecture Exam #2, covered Sections 4.1 – 5.6.**	

Oct. 24	Section 6.1	Inverse circular functions.
Oct. 29	Section 6.2	Trig equations I.
Oct. 31 **Q5**	Section 6.3	Trig equations II.
Nov. 5	Section 6.3	Equations involving Inverse trig functions.
Nov. 7 **Q6**	Section 7.1, 7.2	Oblique triangles and the Law of Sines. The ambiguous case of the Law of Sines.
Nov. 12	Section 7.3	The Law of Cosines.
Nov. 14	**Lecture Exam #3, covered Sections 6.1 – 7.3.**	
Nov. 19	Section 7.4	Vectors
Nov. 21 **Q7**	Section 7.5	Applications of vectors
Nov. 26	Review of the course.	
Dec. 2	Review of the course.	
December 11	**Wednesday**	**4:30p.m. – 7:00 p.m. FINAL EXAM**

Tentative Homework Assignments

Section	Assignment
HW1	
1.1	1,7,11,13,19,21,27,31,35,47, 49,61,71,73,79,109,119,125
1.2	3,7,9,11,15,19,25,29,31,51, 55, 62, 67
HW2	
HW3	
HW4	
HW5	
HW6	
HW7	

5.2	1,3,5
5.3	1,3,7,11,15