Texas A&M International University
Department of Engineering, Mathematics, and Physics
MATH 1316 - Plane Trigonometry
Fall 2012

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Office Hours: 11:30-1 MW, 9-10:30 TR **Class Time**: MWF 10:30-11:20

Class Location: BH 114

Course Description

Trigonometry, analytic trigonometry, applications of trigonometry, complex numbers, polar coordinates and parametric equations

Student Learning Outcomes (SLO's)

Upon successful completion of this course, the student will be able to:

1. Recall the definition of the six basic trigonometric functions: sine, cosine, tangent, cotangent, secant and cosecant, as well as their basic periodicity properties, graphs and symmetries;
2. Identify the inverse trigonometric functions, together with their domains and graphs, and use them to solve trigonometric equations;
3. Verify trigonometric identities and their relative relationships, such as use the value of the trigonometric function of an angle to compute the value of a trigonometric function of the same angle, or double that angle, or half that angle;
4. Use the sine and cosine law to solve a triangle;
5. Perform complex number operations using polar form and use D'Moivre's formula to compute the n^{th} root of a complex number;
6. Use trigonometry to solve problems related to parametric equations;
7. Use trigonometry to solve problems related to polar coordinates;
8. Use vectors and related trigonometry concepts to solve problems in geometry and physics; and
9. Prepare and submit a final paper using phrases commonly found in mathematical literature.

CORE-CURRICULUM LEARNING OUTCOMES (CCO's)

1. Critical Thinking: This course is designated to enhance student's critical thinking in mathematics through their creative thinking, innovation, analysis, evaluation, and synthesis of information. In this course they will be asked to analyze a primary source and use that source as an evidence for a wider argument on the ideas, values, and technical structures (SLO's 1, 2, 3, 4, 5, 6 & 7).
2. Communication Skills: Students will demonstrate their ability to communicate effectively by using *written* communication (SLO's 8 & 9).
3. Empirical and Quantitative Skills: includes the manipulation and analysis of numerical data or observable facts resulting in informed conclusions. (SLO's 8 & 9).

Prerequisite

One or more of an ACT Mathematics score of 27 or above, a SAT Mathematics score of 630 or above, a COMPASS score of College Algebra 51 or above, or MATH 1314.

Textbook

"Analytic Trigonometry with Applications", 11th Edition. Barnett, Ziegler, and Byleen. Wiley, ISBN 978-0-470-64805-6. This is the required reading.

Course Requirements

1. Topics to be covered, and associated reading assignments, are given in the attached class schedule. Students must read the required reading assignments prior to the lecture period.

2. There will be three exams during the course. Two non-cumulative exams will be given during the semester, and a final exam will be given at the end. The scheduled dates for these are included in the attached class schedule. There will be no make-up exams whatsoever. Any missed examinations will be given a score of a zero.

3. Homework problems will be assigned after some classes in the course, and will be collected.
Students are expected to complete all assigned work, and the material covered in the homework will be included in the exams.

4. Official course communication will take place via TAMIU e-mail. So please use your TAMIU email if you wish to contact me for any reason.

Calculator

The use of calculators is permitted in this class and during exams. However, the use of calculators must not interfere with or compromise the essential problem-solving skills and the mathematical knowledge base which this course will provide.

Class Attendance

A student that misses any class will be penalized 1 point of the overall grade for each class missed. Three points (extra credit) will be given to students who attend all classes.

Grading Policy

Points are accumulated during the semester and will be made available to the student upon request at any time during the semester. Final grades will be from "A" to "F" as follows:

A	90-100
B	80-89
C	70-79
D	60-69
F	< 60

Grade Distribution

The grade will be distributed as follows:

Participation	10%
Homework Assignments/Quizzes	10%
Final Paper	10%
Exam 1	15%
Exam 2	20%
Final Exam	35%

Class Schedule

Class schedule is shown below. Reading assignments will be given at the end of each class session. Students are required to do those reading assignments prior to each class session.

	Monday	Wednesday	Friday
Week 1, Aug 20-24	Review: angles, triangles, arcs, measurements, similar triangles I		
Week 2, Aug 27-31	Review: angles, triangles, arcs, measurements, similar triangles II, Trigonometric ratios, right triangle approach, applications		
Week 3, Sept 3-7	Measurements, linear and angular velocity, unit circle approach, applications		
Week 4, Sept 10-14	Trigonometric functions: exact values, graphs, trigonometric function properties		
Week 5, Sept 17-21	Graphing trigonometric functions, applications		
Week 6, Sept 24-28	Trigonometric identities, equations, & applications		**1st Exam**
Week 7, Oct 1-5	Sum, difference, and co-function identities, double-angle and half-angle identities		
Week 8, Oct 8-12	Product-sum and sum-product identities, inverse trigonometric function; exact values, graphs		
Week 9, Oct 15-19	Inverse trigonometric function properties	trigonometric equations/applications	**Mid-semester break!**
Week 10, Oct 22-26	Law of sines, law of cosines, applications		**2nd Exam**
Week 11, Oct 29-Nov 2	Areas of triangles, applications		
Week 12, Nov 5-9	Vectors, applications		
Week 13, Nov 12-16	Dot product, applications		
Week 14, Nov 19-23	Complex numbers, polar and rectangular coordinates, parametric equations, applications	**Thanksgiving Holiday!**	**Thanksgiving Holiday!**
Week 15, Nov 26-30	De Moivre's theorem, the n^{th}-Root theorem, applications		
Week 16, Dec 3-End	**Final Exam – Exact Date will be determined**		

Syllabus Change

This syllabus is subject to changes throughout the semester. The students will be notified if such changes occur.

Student Demeanor

Please come to the class on time so that you do not miss any of the material. Please put your cell phone on silent mode during the class. Please be respectful to your fellow students and do not disturb others or talk during the class. And most importantly, please work hard!

Policies of the College of Arts and Sciences

Classroom Behavior

The College of Arts and Sciences encourages classroom discussion and academic debate as an essential intellectual activity. It is essential that students learn to express and defend their beliefs, but it is also essential that they learn to listen and respond respectfully to others whose beliefs they may not share. The College will always tolerate diverse, unorthodox, and unpopular points of view, but it will not tolerate condescending or insulting remarks. When students verbally abuse or ridicule and intimidate others whose views they do not agree with, they subvert the free exchange of ideas that should characterize a university classroom. If their actions are deemed by the professor to be disruptive, they will be subject to appropriate disciplinary action, which may include being involuntarily withdrawn from the class.

Plagiarism and Cheating

Plagiarism is the presentation of someone else's work as your own. 1) When you borrow someone else's facts, ideas, or opinions and put them entirely in your own words, you must acknowledge that these thoughts are not your own by immediately citing the source in your paper. Failure to do this is plagiarism. 2) When you also borrow someone else's words (short phrases, clauses, or sentences), you must enclose the copied words in quotation marks as well as citing the source. Failure to do this is plagiarism. 3) When you present someone else's paper or exam (stolen, borrowed, or bought) as your own, you have committed a clearly intentional form of intellectual theft and have put your academic future in jeopardy. This is the worst form of plagiarism.

Here is another explanation from the 2010, sixth edition of the *Manual of The American Psychological Association* (APA):

> *Plagiarism:* Researchers do not claim the words and ideas of another as their own; they give credit where credit is due. Quotations marks should be used to indicate the exact words of another. *Each* time you paraphrase another author (i.e., summarize a passage or rearrange the order of a sentence and change some of the words), you need to credit the source in the text.
>
> The key element of this principle is that authors do not present the work of another as if it were their own words. This can extend to ideas as well as written words. If authors model a study after one done by someone else, the originating author should be given credit. If the rationale for a study was suggested in the Discussion section of someone else's article, the person should be given credit. Given the free exchange of ideas, which is very important for the health of intellectual discourse, authors may not know where an idea for a study originated. If authors do know, however, they should acknowledge the source; this includes personal communications. (pp. 1516)

Consult the Writing Center or a recommended guide to documentation and research such as the *Manual of the APA* or the *MLA Handbook for Writers of Research Papers* for guidance on proper documentation. If you still have doubts concerning proper documentation, seek advice from your instructor prior to submitting a final draft.

***Use of Work in Two or More Courses*:** You may not submit work completed in one course for a grade in a second course unless you receive explicit permission to do so by the instructor of the second course.

Penalties for Plagiarism: Should a faculty member discover that a student has committed plagiarism, the student should receive a grade of 'F' in that course and the matter will be referred to the Honor Council for possible disciplinary action. The faculty member, however, may elect to give freshmen and sophomore students a "zero" for the assignment and to allow them to revise the assignment up to a grade of "F" (50%) if they believe that the student plagiarized out of ignorance or carelessness and not out of an attempt to deceive in order to earn an unmerited grade. This option should not be available to juniors, seniors, or graduate students, who cannot reasonably claim ignorance of documentation rules as an excuse.

Caution: Be very careful what you upload to Turnitin or send to your professor for evaluation. Whatever you upload for evaluation will be considered your final, approved draft. If it is plagiarized, you will be held responsible. The excuse that "it was only a draft" will not be accepted.

Caution: Also, do not share your electronic files with others. If you do, you are responsible for the possible consequences. If another student takes your file of a paper and changes the name to his or her name and submits it and you also submit the paper, we will hold both of you responsible for plagiarism. It is impossible for us to know with certainty who wrote the paper and who stole it. And, of course, we cannot know if there was collusion between you and the other student in the matter.

Penalties for Cheating*:* Should a faculty member discover a student cheating on an exam or quiz or other class project, the student should receive a "zero" for the assignment and not be allowed to make the assignment up. The incident should be reported to the chair of the department and to the Honor Council. If the cheating is extensive, however, or if the assignment constitutes a major grade for the course (e.g., a final exam), or if the student has cheated in the past, the student should receive an "F" in the course, and the matter should be referred to the Honor Council. Under no circumstances should a student who deserves an "F" in the course be allowed to withdraw from the course with a "W."

Student Right of Appeal*:* Faculty will notify students immediately via the student's TAMIU email account that they have submitted plagiarized work. Students have the right to appeal a faculty member's charge of academic dishonesty by notifying the TAMIU Honor Council of their intent to appeal as long as the notification of appeal comes within 5 business days of the faculty member's email message to the student. The *Student Handbook* provides details.

UConnect, TAMIU E-Mail, and Dusty Alert

Personal Announcements sent to students through TAMIU's UConnect Portal and TAMIU Email are the official means of communicating course and university business with students and faculty – not the U.S. Mail and not other email addresses. Students and faculty must check UConnect and their TAMIU email accounts regularly, if not daily. Not having seen an important TAMIU email or UConnect message from a faculty member, chair, or dean is not accepted as an excuse for failure to take important action. Students, faculty, and staff are encouraged to signup for *Dusty Alert* (see www.tamiu.edu). *Dusty Alert* is an instant cell phone text messaging system allowing the university to communicate immediately with you if there is an on campus emergency, something of immediate danger to you, or a campus closing.

Copyright Restrictions

The Copyright Act of 1976 grants to copyright owners the exclusive right to reproduce their works and distribute copies of their work. Works that receive copyright protection include published works such as a textbook. Copying a textbook without permission from the owner of the copyright may constitute copyright infringement. Civil and criminal penalties may be assessed for copyright infringement. Civil penalties include damages up to $100,000; criminal penalties include a fine up to $250,000 and imprisonment.

Students with Disabilities

Texas A&M International University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal education opportunity. It is the student's responsibility to register with the Director of Student Counseling and to contact the faculty member in a timely fashion to arrange for suitable accommodations.