College Trigonometry  
MATH 1316.21 and MATH-1316.22  
Department of Mathematics and Statistics  
Fall 2020

A. COURSE INFORMATION

Course number/section: MATH-1316.021, 54898,  
MATH-1316.022, 52956  
Class meeting time: TR 11:00-12:15 PM,  
Class location: OCNR-115  
Course Website: Blackboard

B. INSTRUCTOR INFORMATION

Instructor: Celil Ekici, PhD  
Office location: CI312  
Office hours: Monday, Tuesday, Thursday 9:00AM-11:00AM  
Telephone: 361 825-2819  
e-mail: celil.ekici@tamucc.edu  
Appointments: You can schedule a meeting by sending an email, in person or via online WebEx

C. COURSE DESCRIPTION

Trigonometric functions, identities, height and distance, equations involving Trigonometric functions, solutions of triangles, area, vectors and their basic applications, Inverse functions

D. PREREQUISITES AND COREQUISITES

Prerequisites  
MATH 1314 or placement into MATH 1316. Fall, Spring and Summer.  
Corequisites  
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)  
ISBN-10: 1-111-57448-0

Supplies  
A graphing calculator is recommended. You will use softwares GeoGebra and Desmos which are freely available. You will be expected to experiment with trigonometric functions using these applications as well as studying the assigned online activities using these virtual manipulatives for
learning trigonometry. You can further explore these freely-accessible resources from by GeoGebra.org and desmos.com.

• You are expected to follow the assignments from WebAssign for online homework and additional support for the textbook. The WebAssign access information will be available in Blackboard with the textbook.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

Upon successful completion of this course, you will:

1. Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
2. Develop fluency using different representations of trigonometric functions
   a. Graph trigonometric functions and their transformations.
   b. Tabular representations of trigonometric functions
3. Prove trigonometric identities.
   a. Develop algebraically and graphically the multiple angle and half angle formulas for parent trigonometric functions
4. Solve trigonometric equations with inverse functions.
5. Triangle Trigonometry
   a. Solve right and oblique triangles
   b. Understand how the concepts of trigonometry is used in real life applications
      i. Use triangle trigonometry in solving triangles in surveying problems
      ii. Use circle trigonometry to fit sine/cosine functions to a given graph and data.
      iii. Model periodic data from real world using trigonometric functions using tabular and graphical and algebraic representations.
      iv. (Optional project topic) Do a survey of how trigonometry was developed and practiced throughout history.
6. Circle Trigonometry: Building on unit circle metaphor, develop a synthesis of the ideas of rotation, dilation and the powers of complex numbers
   a. Understand how the idea of rotation and multiple angle formulas are connected.
   b. Connect the polar and Cartesian coordinates with the idea of complex numbers
   c. Understand the connections among the powers of complex numbers, and multiple angle formulas, \( \sin(n\theta) \).
   d. Express of complex numbers with the trigonometric form of complex numbers including DeMoivre’s formula.
e. Use the Euler form $r e^{i\theta}$ for complex numbers.

7. Trigonometric Functions as objects: Understand the behaviors and applications of the periodic functions modeled by trigonometric functions
   a. Understanding the connection between multiplicative and additive structures with trigonometric functions with multiple periods and close periods
   b. (Project Options) Modeling with a series of trigonometric functions.
   Understanding auditory & graphical representations of sinusoidal functions with different periods.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Methods and activities for instruction include:
• instructional presentation of new material and concepts,
• class discussion, group discussions, and problem solving analysis using critical thinking techniques,
• individual written assignments such as problem of the weeks to enhance understanding of new concepts,
• online and individual instructional support using WebAssign.
• inquiry based approaches in developing fundamental ideas of trigonometry in the frames of triangles, circles, functions and their transitions.
• discovery method using digital manipulatives by integrating instructional technologies such as Geogebra, Desmos, spreadsheets or graphing calculators to view the effects of shifting and translation concepts on the trigonometric functions,

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Exams</td>
<td>%20</td>
</tr>
<tr>
<td>Modeling Assignments &amp; Quizzes</td>
<td>%10</td>
</tr>
<tr>
<td>Homeworks- WebAssign</td>
<td>%20</td>
</tr>
<tr>
<td>Project Report &amp; Presentation</td>
<td>%15</td>
</tr>
<tr>
<td>Attendance &amp; Participation</td>
<td>%5</td>
</tr>
<tr>
<td>Common Final</td>
<td>%20</td>
</tr>
<tr>
<td>TOTAL</td>
<td>%100</td>
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I. COURSE CONTENT/SCHEDULE

COURSE CONTENT/SCHEDULE:
Below is the pacing schedule projected at the beginning of the semester. Based on your needs, we can make slight adjustments to the pacing schedule. For any adjustments, the announcements will be made during the class. You are expected to follow the most updated pacing schedule from the blackboard.

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 0-1</td>
<td>Chapter 2.1 Unit Circle 1</td>
<td>Chapter 1</td>
<td>Review on Functions, Web Assign</td>
</tr>
<tr>
<td>Week 1:</td>
<td>Unit circle, Trigonometric Functions of Real Numbers</td>
<td>Chapter 2.1 Chapter 2.2</td>
<td>WebAssign</td>
</tr>
<tr>
<td>Week 2</td>
<td>Trigonometric Graphs</td>
<td>Chapter 2.3 and 2.4</td>
<td>WebAssign</td>
</tr>
<tr>
<td>Week 3.</td>
<td>Inverse trigonometric functions and graphs</td>
<td>Chapter 2.4 and 2.5</td>
<td>WebAssign</td>
</tr>
<tr>
<td>Week 4</td>
<td>Modeling Harmonic Motion &amp; Project Proposals</td>
<td>Modeling Assignment Due; Project Proposal Idea Due (1st)</td>
<td></td>
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<tr>
<td>Week 5</td>
<td>Online review and Exam 1</td>
<td></td>
<td></td>
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<tr>
<td>Week</td>
<td>Topics</td>
<td>Sections</td>
<td>Weeks</td>
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<tr>
<td>Week 5</td>
<td>Project Proposals and Right triangle Approach, 3.1 Angle Measure</td>
<td>3.1</td>
<td>2nd revision</td>
</tr>
<tr>
<td>Week 6</td>
<td>3.2 Trigonometric Function of Angles, 3.3 Inverse trigonometric functions and Right triangles</td>
<td>3.2 3.3</td>
<td></td>
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<tr>
<td>Week 7</td>
<td>Law of Sines Chapter 3.5, Law of Cosines 3.6</td>
<td>3.5 3.6</td>
<td></td>
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<tr>
<td>Week 8</td>
<td>Holiday – No classes</td>
<td></td>
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<tr>
<td>Week 9.</td>
<td>4.1 Trigonometric Identities, 4.2 Addition Subtraction formulas Small Modeling -Modeling Rotation</td>
<td>4.1 4.2</td>
<td></td>
</tr>
<tr>
<td>Week 10</td>
<td>4.3 Double angle and product Sum Formulas, 4.4 Basic trigonometric equations Modeling Projectile Motion</td>
<td>4.3 4.4</td>
<td></td>
</tr>
<tr>
<td>Week 11</td>
<td>Polar Form of Complex Numbers and DeMoivre’s Theorem Complex Numbers and Trigonometry Optional: Traveling Waves-Modeling</td>
<td>5.1 5.3</td>
<td></td>
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<tr>
<td>Week 12</td>
<td>Plane curves and parametric equations Modeling Orbits with Trigonometric Functions</td>
<td>5.4</td>
<td></td>
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<tr>
<td>Week 13</td>
<td>Exam 2 Applications of Trigonometry and Vectors, dot and cross product</td>
<td>. 6.2 and 6.5</td>
<td></td>
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<tr>
<td>Week 14</td>
<td>Project Presentations &amp; Reports Due Project reports due</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

**Important Dates:**

August 19  Classes begin Regular Fall & 1st 7-week session
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 26</td>
<td>Last day to late register or add a class</td>
</tr>
<tr>
<td>September 3</td>
<td>12th Class Day Census</td>
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<tr>
<td>September 7</td>
<td>Labor Day Holiday- Campus Closed</td>
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<tr>
<td>October 14-28</td>
<td>Mid-Term Grading</td>
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<tr>
<td>November 5</td>
<td>Last day to drop a class in the full term</td>
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<tr>
<td>November 25</td>
<td>Reading Day- No Class</td>
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<tr>
<td>November 26-27</td>
<td>Thanksgiving Holiday- Campus Closed</td>
</tr>
<tr>
<td>November 30</td>
<td>Reading Day- No Class</td>
</tr>
<tr>
<td>December 3</td>
<td>FINAL EXAM 8:00am - 10:30am, Place TBA</td>
</tr>
<tr>
<td>December 8-11</td>
<td>Grading days</td>
</tr>
<tr>
<td>December 14</td>
<td>Fall grades due at noon</td>
</tr>
</tbody>
</table>

I. COURSE POLICIES

COVID-19

Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.

- **Attendance/Tardiness**
  You are expected to be regular and punctual in your class attendance online/in class with synchronous and asynchronous timely engagement. You are responsible for all notes, assignments and announcements made in class. Please regularly check BlackBoard for updates.

- **Late Work and Make-up Exams**
  Late work and Make-up Exams are allowed with proper documentation submitted to Student Services.

- **Extra Credit**: None

- **Cell Phone Use**
  There is a zero tolerance policy for texting or any other cell phone use in class. Cell phones may be left on vibrate for emergency notification purposes. If you expect an
important phone call, please inform me before class and quietly excuse yourself when you receive it.

x Participation
An important aspect of learning to teach is, in part, a function of being a member of a community of learners that interacts to build knowledge about teaching and children’s learning. Another important aspect of learning to teach is engagement and collaborative work. Effective teachers are committed to professional growth through participation and collaboration to improve their practice. You are expected to actively participate in class, as this course is designed to draw upon the experiences and insights of your peers and your participation makes for a richer experience for all. Simply attending class does not constitute participation.

J. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University)
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

• Classroom/Professional Behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• Statement of Civility
Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

• Deadline for Dropping a Course with a Grade of W (University)
I hope that you never find it necessary to drop this or any other class. However, events can
sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- Grade Appeals (College of Science and Engineering)
As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- Disability Services
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

- Civil Rights Complaints
Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz.
Limits to Confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

- Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

OTHER INFORMATION
- Academic Advising
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.