COURSE: MATH-1330-007 Trigonometry

CREDIT HOURS: 3

PREREQUISITES: MATH-1320 with minimum grade of C–, or minimum ACT score of 22, or minimum SAT score of 520, or minimum score of 61 on the math placement test

PROFESSOR: Jim Anderson

OFFICE: UH 3013

OFFICE HOURS: Monday 12:30 – 1:30
               Tuesday 4:30 – 5:30
               Wednesday 5:30 – 6:30
               Thursday 10:30 – 11:30
               Friday 12:30 – 1:30, 3:00 – 4:00

Other times are available by appointment with a 24-hour notice.

TELEPHONE: (419) 530-7296

E-MAIL: jim.anderson@utoledo.edu

WEBPAGE: http://www.math.utoledo.edu/~janders

COURSE WEBPAGE: http://www.math.utoledo.edu/~janders/1330

LECTURE: MWF 2:00 - 2:50 pm ST 0118


COURSE DESCRIPTION: Definitions and graphs of trigonometric functions and their inverses, solving trigonometric equations, applications and topics in analytic geometry. This course is not applicable toward the undergraduate Math major requirements. No credit given for students who have credit for MATH-1340.

COURSE INSTRUCTION: This course will be taught by a method known as the reverse classroom or the flipped classroom. This means that you will do your own lecture outside the classroom using available technology, and you will come to class prepared to ask and answer questions and work on problems similar to the pre-class problems.
COURSE OUTLINE: We will cover Chapters 1, 2, and 3. Your semester grade for this course will be based on the following:

- 2 Exams (worth 100 pts. each) 200 pts.
- Weekly Homework 100 pts.
- Final Exam 150 pts.
- TOTAL 450 pts.

Your final exam percentage can be used to replace your lowest exam score or your homework score if it is higher.

IN-CLASS PROBLEMS: These problems will be worked in class and will be similar to the pre-class problems and the weekly homework problems. These problems will be turned in at the end of class. These problems will not be graded. However, they will be used in borderline grade cases and will be used to establish your attendance of class. These problems will be returned to you at the next class meeting.

WEEKLY HOMEWORK PROBLEMS: The homework problems will be emailed to your UTAD email address and posted on the course webpage. These problems will be due at the next class meeting. You will be allowed to make two submissions of work and answers for these problems in order to obtain the best possible score. Your final score will be posted on Blackboard. Your lowest homework score will be dropped. The maximum for each set of homework problems is 30 points. Your homework total will be scaled to a score of 100 points.

BONUS POINTS: You will have a chance to earn bonus points during the semester. All bonus points are added in with your homework scores.

GRADE INFORMATION: All your scores and current course grade will be posted on Blackboard.

BLACKBOARD USE: Blackboard will only be used to post the course syllabus under the Public Area and your grade information. Everything else including the course syllabus will be posted on the course webpage.

GRADING CRITERIA:

- A 450 – 418
- A– 417 – 405
- B+ 404 – 391
- B 390 – 373
- B– 372 – 360
- C+ 359 – 346
- C 345 – 328
- C– 327 – 315
- D+ 314 – 301
- D 300 – 283
- D– 282 – 270
- F Below 270

These numbers could go lower if there is a curve for the exams.

WEBPAGE MISTAKES: I want all the material on the course webpage to be mistake free. So, if you find a mistake on the course webpage, you will receive one bonus point for notifying me about it by email, phone, or stopping by the office during office hours.

FINAL EXAM: The final exam is comprehensive and will be given on Thursday, Dec 15,
from 12:30 to 2:30 pm in **GH** 5300. GH = Gillham Hall.

**ELECTRONIC DEVICES:** NO electronic devices will be allowed for any of the exams and the homework problems.

**ATTENDANCE POLICY:** You must attend class. You should arrive for class on time. You should not leave class early. You are responsible for all material which you miss if you are absent. Please read the University’s **missed class policy.** If you know that you have to miss a class, you must notify me in writing or by email before your absence. In the case of an emergency, you must notify me as soon as possible. If you have an excused absence, you may make up the homework assignment or exam with the appropriate written documentation. There is **NOT** any make-up work for an unexcused absence. The last day to withdraw from this class is Friday, Oct 28.

**LECTURE NOTES**

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**LEARNING OBJECTIVES:**

The objective of this course is to develop your mathematical skills, with emphasis on problems requiring the use of trigonometric functions. A more detailed list of learning objectives is given below. At least 70% of the course time will be devoted to these essential outcomes. These objectives are listed again in the chronological list of topics at the end of this syllabus.

- **Representation:** Graphical, algebraic, numerical, and verbal representation of trigonometric and inverse trigonometric functions verbally, numerically, graphically and algebraically.
**Definitions**: Define the six trigonometric functions in terms of right triangles and the unit circle.

**Graphs**: Determine whether a trigonometric relation or given graph represents a function; perform transformations on graphs and operations with functions; determine intercepts, domain, range, intervals of monotonicity, vertex of a quadratic, asymptotes, symmetry; and match graphs to trigonometric definitions.

**Modeling**: Use trigonometric and inverse functions to model a variety of real-world problem-solving applications.

**Equations**: Solve a variety of trigonometric and inverse trigonometric equations, in degrees and radians for both special and non-special angles; solve application problems that involve such equations.

**Angles/Triangles**: Express angles in both degree and radian measure. Solve right and oblique triangles in degrees and radians for both special and non-special angles, and solve application problems that involve right and oblique triangles.

**Identities**: Verify trigonometric identities by algebraically manipulating trigonometric expressions using fundamental trigonometric identities, including the Pythagorean, sum and difference of angles, double-angle and half-angle identities.

**Vectors**: Represent vectors graphically in both rectangular and polar coordinates and understand the conceptual and notational difference between a vector and a point in the plane; perform basic vector operations both graphically and algebraically; solve application problems using vectors.

**TOPICS TO BE COVERED**: The learning objective(s) covered by that topic in addition to the Representation learning objective follow(s) in italics.

1. Radian and Degree Measure (Section 1.1) **Angles**
2. The Six Trigonometric Functions in Terms of a Right Triangle (Section 1.3) **Triangles, Modeling**
3. Applications Involving Right Triangles (Section 1.8) **Modeling**
4. Definition of the Six Trigonometric Functions Using the Unit Circle (Section 1.2) **Definitions**
5. Reference Angles (Section 1.4) **Definitions**
6. Coterminal Angles (Sections 1.1 and 1.2) **Definitions**
7. The Graphs of the Trigonometric Functions (Sections 1.5 and 1.6) **Graphs**
8. The Inverse Trigonometric Functions (Section 1.7) **Definitions, Modeling**
9. The Graphs of the Inverse Trigonometric Functions (Section 1.7) **Graphs**
10. Fundamental Trigonometric Identities (Sections 2.1 and 2.2) **Identities**
11. Pythagorean Identities (Sections 2.1 and 2.2) **Identities**
12. Solving Trigonometric Equations (Section 2.3) **Equations, Modeling**
13. Sum and Difference Formulas (Section 2.4) **Identities**
14. Double-Angle Formulas (Section 2.5) **Identities**
15. Half-Angle Formulas (Section 2.5) **Identities**
16. The Law of Sines (Section 3.1)
17. The Law of Cosines (Section 3.2)
18. Vectors (Section 3.3) **Vectors, Modeling**

**ACADEMIC DISHONESTY**: Any act of academic dishonesty as defined by the University of Toledo policy on academic dishonesty will result in an F in the course or an F on the item in question, subject to the determination of the instructor.

**NON-DISCRIMINATION POLICY**: The University of Toledo is committed to a policy of equal opportunity in education, affirms the values
and goals of diversity.

**STUDENT DISABILITY SERVICES:**
The University will make reasonable academic accommodations for students with documented disabilities. Students should contact the Office of Student Disability Services (Rocket Hall 1820; 419-530-4981; studentdisabilitysvs@utoledo.edu) as soon as possible for more information and/or to initiate the process for accessing academic accommodations.

**STUDENT PRIVACY:**
Federal law and university policy prohibits instructors from discussing a student's grades or class performance with anyone outside of university faculty/staff without the student's written and signed consent. This includes parents and spouses. For details, see the “Confidentiality of student records (FERPA)” section of the University Policy Page at http://www.utoledo.edu/policies/academic/undergraduate/index.html