Technical Math Applications (TECM 1349)

Credit: 3 semester credit hours (3 hours lecture)

Prerequisite/Co-requisite: None

Course Description

Trigonometry and geometry as used in a variety of technical settings. Includes the use of plane and solid geometry to solve areas and volumes encountered in industry.

Required Textbook and Materials

1. There is no textbook for this class; instructor created materials will be used.
2. A **basic** scientific calculator with the trigonometric functions (sin, cos, tan) and a build in π key (no graphing or programmable calculators). *Please check with your individual instructor as to the specific type of calculator required.*
3. Protractor
4. Three-ring binder, a set of 7 dividers, notebook paper, pencils, eraser

Course Objectives

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

1. Solve right triangle applications.
2. Calculate areas of plane surfaces.
3. Solve volumes of standard solids.
4. Add and subtract vectors.

Course Outline

A. Unit 1: Introduction to Geometry
   1. Fundamental Definitions of Geometry
   2. Angles
   3. Relations of Lines
   4. Polygons and Their Properties
   5. Triangles and Their Properties
   6. Quadrilaterals and Their Properties

B. Unit 1: Polygons
   1. Perimeter vs. Area
   2. Area of a Square and Rectangle
   3. Area of a Parallelogram
   4. Area of a Triangle
   5. Area of a Trapezoid

C. Unit 2: Triangles
   1. Congruent Triangles
   2. The Right Triangle
   3. The Square and its Diagonals
   4. Isosceles Triangles and Their Properties
   5. Equilateral Triangles and Their Properties
   6. Hexagons and Their Properties
   7. Similar Triangles

D. Unit 3: The Circle
   1. Definitions
   2. Properties
   3. Relations between Diameter, Radius, and Circumference
   4. Historical Note Concerning Pi
   5. Intercepted Arc Length
   6. Area of a Circle
   7. Area of a Ring (Annulus)
   8. Area of a Sector
   9. Segments
   10. Ellipse

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11. Regular Polygons and Circles

E. Unit 4: Geometric Solids
   1. Prisms
   2. Cylinders
   3. Pyramids
   4. Cones
   5. Frustums
   6. Spheres
   7. Torus

F. Unit 5: Trigonometry
   1. Introduction to Trigonometry
   2. Right Triangle Trigonometry
   3. Oblique Triangle Trigonometry

G. Unit 6: Vectors
   1. Introduction to Vectors
   2. Addition and Subtraction of Vectors

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

Tests	72%
Comprehensive Final Exam	14%
Course Assignments and Participation	14%

Course Requirements

1. Attendance is mandatory.
2. Tests and the final exam.
3. Course assignments.
4. Additional course requirements as defined by the individual course instructor.

Course Policies

1. Cheating of any kind will <u>not</u> be tolerated.
2. No food, drinks, or use of tobacco products in class.
3. Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
4. The students are responsible for initiating and completing the drop process. Students who stop coming to class and fail to drop the course will earn an "F" in the course.
5. Additional class policies as defined by the individual course instructor.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability

requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Course Schedule

(*subject to change; tests will be assigned by each individual instructor*)

Week	Topic	Reference
1	Course introduction and policies Introduction to Geometry (all topics covered)	Syllabus, other instructor information Unit 1: Introduction to Geometry
2	Polygons: Perimeter vs. Area, Area of a Square, Rectangle, Parallelogram, and Triangle	Unit 1: Polygons
3	Polygons: Area of a Triangle and Trapezoid	Unit 1: Polygons
4	Triangles: Congruent Triangles The Right Triangle, The Square and its Diagonals	Unit 2: Triangles
5	Triangles: Isosceles Triangles and Their Properties, Equilateral Triangles and Their Properties, Hexagons and Their Properties Similar Triangles	Unit 2: Triangles
6	Review Triangles Unit	Unit 2: Triangles
7	Circles: Definitions Properties Relations between Diameter, Radius, and Circumference Historical Note Concerning Pi Intercepted Arc Length Area of a Circle Area of a Ring (Annulus) Area of a Sector Segments	Unit 3: Circles
8	Circles: Ellipse Regular Polygons and Circles	Unit 3: Circles
9	Review Circle Unit	Unit 3: Circles
10	Geometric Solids: Prisms, Cylinders	Unit 4: Geometric Solids
11	Geometric Solids:	Unit 4: Geometric Solids

Week	Topic	Reference
	Pyramids, Cones, Frustums	
12	Geometric Solids: Sphere, Torus Review Geometric Solids Unit	Unit 4: Geometric Solids
13	Trigonometry: Introduction to Trigonometry, Right Triangle Trigonometry	Unit 5: Trigonometry
14	Trigonometry: Right Triangle Trigonometry, Oblique Triangle Trigonometry	Unit 5: Trigonometry
15	Trigonometry: Oblique Triangle Trigonometry Vectors (all topics covered)	Unit 5: Trigonometry Unit 6: Vectors
16 Final Exam	Final Exam *Given on the date and time specified by the official exam schedule.*	

Contact information varies by instructor.