Technical Math Applications (TECM 1349) Online

Credit: 3 semester credit hours (3 hours lecture)

Prerequisite/Co-requisite: Online Orientation and answering "Yes" to seven or more questions on the Distance Education Self-Evaluation: http://www.lit.edu/depts/DistanceEd/OnlineOrientation/OOStep2.aspx

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. *This course is time-bound, structured, and mostly online. All tests and the final exam are administered in a proctored environment (please refer to the proctoring policy located at the end of this syllabus)*

Student Identification Fees

This course requires all test and the final exam be administered in a proctored environment. The Lamar Institute of Technology testing center offers free proctoring services for LIT students. Other testing centers may require a fee for proctoring services.

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

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
    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 *(schedule of tests to be posted in Blackboard)*	60%
Comprehensive Final Exam	12%
Course Assignments and Participation	28%

Course Requirements

1. Proctored tests and proctored final exam.
2. Course assignments.
3. Blackboard logon and access to course a minimum of four times per week.
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. The students are responsible for initiating and completing the drop process. Students who stop participating in class and fail to drop the course will earn an "F" in the course.
3. 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.

Technical Requirements

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:
http://kb.blackboard.com/pages/viewpage.action?pageId=25368512
A functional broadband internet connection, such as DSL, cable, 3G, 4G, WiMAX, WiFi, satellite, or other broadband access is necessary to maximize the use of the online technology and resources.

Course Schedule (This course schedule is subject to change.)

Tests will be assigned by each individual instructor and will be taken in a proctored environment.

Week	Topic	Reference
1	Course introduction and policies	Online Menu: • Home Page • Introductory Activities • Class Information • Course Assignments • Discussions
2	Introduction to Geometry (all topics covered)	Online: Unit 1 Introduction to Geometry
3	Polygons: • Perimeter vs. Area • Area of a Square, Rectangle, Parallelogram, and Triangle	Online: Unit 1 Polygons
4	Polygons: Area of a Triangle and Trapezoid	Online: Unit 1 Polygons
5	Triangles: • Congruent Triangles • The Right Triangle • The Square and its Diagonals	Online Unit 2: Triangles
6	Triangles: • Isosceles Triangles and Their Properties • Equilateral Triangles and Their Properties • Hexagons and Their Properties • Similar Triangles	Online Unit 2: Triangles

Week	Topic	Reference
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	Online Unit 3: Circles
8	Circles: • Ellipse • Regular Polygons and Circles	Online: Unit 3 Circles
9	Geometric Solids: • Prisms • Cylinders	Online: Unit 4 Geometric Solids
10	Geometric Solids: • Pyramids • Cones • Frustums	Online: Unit 4 Geometric Solids
11	Geometric Solids: • Sphere • Torus	Online: Unit 4 Geometric Solids
12	Trigonometry: • Introduction to Trigonometry • Right Triangle Trigonometry	Online: Unit 5 Trigonometry
13	Trigonometry: • Right Triangle Trigonometry • Oblique Triangle Trigonometry	Online: Unit 5 Trigonometry
14	Trigonometry: Oblique Triangle Trigonometry	Online: Unit 5 Trigonometry
15	Vectors (all topics covered)	Online: Unit 6 Vectors
16	Final Exam - *Given on the date and time specified by the official exam schedule.*	Online: Final Exam Information Page; Proctoring Center

Contact information varies by instructor.

Proctoring Policy

1. Who is a Proctor?

A proctor is an impartial monitor who administers a student's exam and ensures the security and integrity of the exam process. If proctoring is required, it is the student's responsibility to make the appropriate arrangements, notify the instructor of the arrangements, and pay any incurred fees.

2. Where may you have your test Proctored?

Students may choose to have the exam proctored on the LIT campus or another acceptable proctored environment. LIT Proctoring services are *free* to LIT students. Other Proctoring services may require a fee paid for by the student.

(1) Acceptable Proctors / Sites

- Lamar Institute of Technology Testing Center
- Testing Center which is a member of the National College Testing Association (NCTA). To locate a site: http://www.ncta-testing.org/cctc/
- Testing Center at an accredited college
- Superior officer of the military

(2) Unacceptable Proctors / Sites

- Family members or relatives of the student
- Colleagues or co-workers
- Friends or peers or acquaintances
- Other students, whether from LIT or another campus

NOTE: The instructor reserves the right to deny any proctor, or to assign specific proctors as necessary.

3. What Are the Proctor's Responsibilities?

- Each proctor must keep the exam in a secure area until the student takes the exam.
- The proctor must ask the student for a photo ID if the proctor does not personally know the student.
- Talking to other students is not allowed during administration of the exam.
- Acceptable questions that may be asked by the student during the exam should be directed to the instructor. If the instructor cannot be contacted, the proctor should tell the student to (1) make a reasonable interpretation, (2) write this interpretation on the exam, and (3) continue working on the exam.
- Once the student is finished with the exam, the proctor must collect the exam and sign and date a proctor certification form. This form is only necessary if testing is not done at the LIT testing center. This form will be available within the LMS classroom portal. The proctor must then return **both the exam and certification form** to the instructor through a delivery method previously specified by the instructor.
- If the proctor is unable to administer the exam or cannot abide by the proctoring rules, the proctor must notify the instructor and the student.

4. **How to Schedule and Take the Exam?**
    - Students should schedule their exam with the proctor no later than **one week** prior to the exam.
    - Students must appear on time on the day and time scheduled for the exam.
    - Students must provide a valid student ID or government issued ID.
    - Students are responsible for providing all required supplies necessary for test taking as specified by the instructor.
    - Students must follow all of the testing center's requirements.
    - No cell phones, pagers, computers, PDAs, etc., are allowed in the testing area.
    - No food or drinks are allowed in the testing area.
    - No children may accompany students in the testing area.