TECH-107: TECHNICAL MATHEMATICS II

Effective Term
Fall 2026

CC Approval
11/07/2025

AS Approval
11/13/2025

BOT Approval
11/20/2025

SECTION A - Course Data Elements

Send Workflow to Initiator
No

CB04 Credit Status
Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Mathematics (Master's Degree)	Or
Welding (Any Degree and Professional Experience)	Or
Machine Tool Technology (Tool and die making) (Any Degree and Professional Experience)	Or
Drafting/CADD (Computer Aided Drafting/Design) (Any Degree and Professional Experience)	

Subject Code
TECH - Technical Mathematics
Course Number
107

Department
Technical Mathematics

Division
Career Education and Workforce Development (CEWD)

Full Course Title
Technical Mathematics II

Short Title
Technical Mathematics II

CB03 TOP Code
1701.00 - Mathematics, General

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
E - Non-Occupational

Rationale
The SLOs were revised to streamline outcomes, eliminate redundancy, and ensure alignment with current industry standards and measurable skills for student success.

SECTION B - Course Description

Catalog Course Description

The second of a two-semester course sequence involving the study of practical mathematics as applied to technical and trade work. It is particularly useful for those anticipating a career in an industrial environment. Content includes: mathematical symbols, geometry, algebra, trigonometry, graphing, unit factoring, and applications to technical/trade work. Calculator is required.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade Only

Allow Audit

Yes

Requisites

Prerequisite(s)

Completion of TECH-92 with a minimum grade of C.

Requisite Justification

Requisite Description

Course in a Sequence

Subject

TECH

Course #

92

Level of Scrutiny

Content Review

Upon entering this course, students should be able to:

1. Identify and differentiate mathematical symbols
2. Solve problems using fractions
3. Solve problems using percentages
4. Solve problems using geometric formula
5. Solve problems using algebraic formula
6. Understand and use the metric system
7. Transpose/convert English to metric and metric to English system
8. Perform and/or use arithmetic processes, algebra and/or geometry to find solutions for technical and trade problems

---

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00

Lecture Hours

54.00

Outside of Class Hours
108

Total Contact Hours
54

Total Student Hours
162

Distance Education Approval

Is this course offered through Distance Education?
Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Solve advanced technical problems involving geometry, trigonometry, and graphing relevant to trade and industrial work.
2.	Apply formulas for solids, stress analysis, and unit factoring to calculate dimensions, surface areas, and volumes in technical contexts.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Identify and differentiate mathematical symbols.
2.	Solve problems using geometric formula.
3.	Solve problems using trigonometric formula.
4.	Use graphs in the course of their technical/trade work.
5.	Apply advanced unit factoring to drill press/lathe/machining work.
6.	Perform and/or use arithmetic processes, algebra and/or geometry to find solutions for technical and trade problems.

Course Content

1. REGULAR POLYGONS AND CIRCLES
    a. Definitions
    b. Formulas
    c. Solution of equilateral triangles
    d. Solution of squares
    e. Solution of hexagons
    f. Solution of octagons
    g. Solution of quadrilaterals
    h. Solution of composite figures
    i. Solution of circles
    j. Sectors and arcs Segments
    k. The ellipse
2. SOLIDS
    a. Definitions
    b. Prisms and cylinders
    c. Pyramids and cones
    d. Frustums of pyramids and cones
    e. Spheres
    f. Formulas

g. Finding the volume
h. Finding the surface area
i. Finding the altitude
j. Solutions of composite figures
k. Volume expressed as weight
l. Board measure

3. ELEMENTS OF GEOMETRY
   a. Plain
   b. Solid
   c. Useful axioms
4. THE ESSENTIALS OF TRIGONOMETRY
   a. The right triangles
   b. Trigonometric functions
   c. The use of tables
   d. The use of the calculator
   e. Solution of right triangles
   f. Solution of isosceles triangles
   g. Practical applications
5. STRENGTH OF MATERIALS
   a. Stress and strain
   b. Uses of stresses
   c. Unit stress
   d. Practical applications

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	Explanation of geometry, trigonometry, and solid figures using trade-related examples.

Online Adaptation

Types	Examples of learning activities
Activity	Online exercises emphasizing technical applications such as machining and stress analysis.
Discussion	Online discussions focused on solving complex, multi-step technical math problems.

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
E-mail Communication
Video or Teleconferencing

Student-Initiated Online Contact Types

Discussions

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Quizzes	Students will complete assignments, quizzes, a mid-term and a final. Examples of questions: 1. Find the area of an octogon with 7 in. sides. 2. Find the surface of a 9 in sphere. 3. For a right angle, find the Cosine of 28 degrees.
Problem Solving	Evaluation of applied skills in real-world trade scenarios.

Assignments

Reading Assignments

Students will complete reading assignments from the textbook, instructor generated material, and miscellaneous handouts. Students will read and write answers to practice problems, review exercises, and assessment tests.

Examples include:

1. Read Chapter 4 Solid Geometric Figures and do Chapter Exercises #1-20.
2. Read Chapter 5 Trigonometric Functions and do Chapter Exercises # 1-15.

Writing Assignments

Students will have graded assignments including homework, quizzes, and exams. Students will solve assigned problems from text.

Examples:

1. Find the center-to-center distance of 13 holes drilled on the circumference of a 12-inch circle.
2. A cylinder has a volume of 450 cubic inches and a height of 12 inches, find the lateral surface area of the cylinder.
3. Find the volume of a ring section whose outside diameter is 8 inches and inside diameter is 5 inches and cross-sectional diameter is 1 inch.

SECTION F - Textbooks and Instructional Materials

Material Type

Open Educational Resource (OER)

Author

Gardner, Ota St, Clair

Title

Applied Algebra

Edition/Version

3rd

Publisher

ATE Grant from the National Science Foundation

Year

2014

Material Type

Other required materials/supplies

Description

Calculator

SECTION G - Diversity, Equity and Inclusivity

How does your course and/or course outline of record reflect strategies for accommodating and engaging diverse student populations, advancing equitable outcomes, and fostering inclusion for all students?

This course is designed to create an inclusive learning environment by connecting advanced technical math concepts to a variety of cultural and industry contexts. Students are supported through flexible instructional methods, including visual, applied, and interactive approaches, to address different learning styles and prior knowledge. The course encourages collaborative problem-solving and peer support to engage all learners equitably. Emphasis is placed on practical applications that resonate with students from diverse career paths, promoting confidence and success in technical fields traditionally underrepresented by marginalized groups.

Course Codes (Admin Only)

CB00 State ID

CCC000593558

CB10 Cooperative Work Experience Status

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

No

Only Pass/No Pass

No