Washtenaw Community College Comprehensive Report

MTH 157 Technical Mathematics
Effective Term: Fall 2023

Course Cover

College: Math, Science and Engineering Tech
Division: Math, Science and Engineering Tech
Department: Math & Engineering Studies
Discipline: Mathematics
Course Number: 157
Org Number: 12200
Full Course Title: Technical Mathematics
Transcript Title: Technical Mathematics
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Reactivation
Change Information:
Consultation with all departments affected by this course is required.
Rationale: Reactivating technical math course to meet current student needs.
Proposed Start Semester: Fall 2023
Course Description: In this course, students will learn mathematical topics specific to career technical or occupational studies for students. Topics will include measurement, algebra, geometry, trigonometry, and graphs. These are presented on an introductory level and the emphasis is on applications. The title of this course was previously Geometry and Trigonometry.

Course Credit Hours

Variable hours: No
Credits: 3
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 0 **Student:** 0
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 45 **Student:** 45
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Level 2

Requisites

Prerequisite
Academic Math Level 2

General Education

Degree Attributes
Assoc in Applied Sci - Area 3

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Find the perimeter, area, and volume of various geometric shapes.
   Assessment 1
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Fall 2026
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: Departmental faculty

2. Convert between fractions, proportions, and percentages managing significant figures and round off error.
   Assessment 1
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Fall 2026
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: Departmental faculty

3. Formulate and solve real world linear applications.
   Assessment 1
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Fall 2026
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: Departmental faculty

4. Solve and interpret practical applications with a multimeter, oscilloscope, and circuits.
   Assessment 1
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Fall 2026
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
Who will score and analyze the data: Departmental faculty

5. Solve applied problems using geometric and trigonometric properties.
   Assessment 1
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Fall 2026
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Compare, order, and convert fractions to real numbers (emphasis on common drill bit sizes).
2. Manage significant figures and rounding errors.
3. Calculate proportions and percentages.
4. Apply the equation of a line to real-world situations.
5. Identify how Cartesian plane axis scaling and implications impact data display (multimeter and oscilloscopes).
6. Calculate reciprocals for parallel circuit applications.
7. Use the Pythagorean Theorem to find the length of the unknown side of a right angle.
8. Identify common geometric figures.
9. Find the circumference or perimeter of basic geometric shapes.
10. Measure lengths and angles.
11. Apply principles of scale to make measurement readings using devices such as meters and dials.
12. Convert units within the metric system as well as between English and metric units.
13. Solve basic equations using one step and basic equations requiring two or more steps.
14. Rewrite formulas in terms of an identified variable applying principles of algebra.
15. Express ratios in specified forms.
16. Solve basic problems of direct and indirect proportions.
17. Solve basic application problems involving formulas.
18. Identify variables and the appropriate forms of graphs and charts to display corresponding data.
19. Calculate approximate interpolations and extrapolations by applying information from line graphs.
20. Calculate trigonometric functions for arbitrary angles using a calculator and the unit circle.
21. Calculate degree measures of angles in a right triangle from given sine, cosine, and tangent values using a scientific calculator.
22. Apply trigonometry to solve basic and applied problems involving right triangles.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		

Dave Erwin	*Faculty Preparer*	*Feb 17, 2023*
Department Chair/Area Director:		
Lisa Manoukian	*Recommend Approval*	*Mar 01, 2023*
Dean:		
Tracy Schwab	*Recommend Approval*	*Mar 01, 2023*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Mar 29, 2023*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Apr 13, 2023*
Vice President for Instruction:		
Victor Vega	*Approve*	*Apr 17, 2023*