

Math 125 Technical Mathematics**Credit Hours:** 4**Scheduled hours per week**

Lecture: 4

Lab: 0

Other: 0

Catalog Course Description: Provide students with a basic understanding of the algebraic and trigonometric concepts that are necessary to successfully advance in technological fields. Proficiency will be obtained through applications involving fractions and decimals; percentages; area and volume; accuracy and error in measurement; pictorial representations of data; metric units of time, temperature and current; linear equations; and trigonometry of triangles.

Pre-requisites: Students must score 19 or above on ACT or score 3 or above on the High School Summative Exam to enroll in this course.

Co-requisites: Students who score below 19 on ACT or score a 1 or 2 on the High School Summative Exam must take the co-requisite lab Math 125E.

Course Learning Outcomes:

- A. Students will solve application problems involving, ratios, proportions, and variation.
- B. Students will be able to calculate length, weight, mass, volume, and area of geometric shapes and irregular areas using both English and Metric units and will be able to convert from one system to the other.
- C. Students will demonstrate the ability to solve linear equations of one variable and applications of such.
- D. Students will be able to find area, volume, perimeter, and surface area for various geometric shapes including quadrilaterals, triangles, circles, cylinders, pyramids, prisms, cones, and spheres.
- E. Students will be able to define the trig functions in terms of a right triangle, find the missing parts of right triangles using the trig ratio, and solve application problems involving right triangles.
- F. Students will be able to write numbers using scientific notation.
- G. Students will be able to work with metric units involving time, temperature, current, and other units.
- H. Students will be able to approximate numbers and determine accuracy, precision, greatest possible error, relative error, and percent error.
- I. Students will be able to solve equations dealing with grouping symbols, fractions, and formulas.
- J. Students will be able to classify angles and identify similar geometric figures.
- K. Students will be able to read and represent data with bar graphs, circle graphs, line graphs, and other pictorial representations.
- L. Students will be able to perform operations using the exponent laws.
- M. Students will be able to solve first degree algebraic equations and applications of such.
- N. Students will be able to calculate the surface area of various solid figures.
- O. Students will graph lines, calculate slope, y-intercept, and write equations of lines.
- P. Students will be able to classify angles.

- Q. Students will be able to calculate the algebraic signs of the trig functions for any angle, calculate the trig functions for radian measured angles, find inverse trig functions, and solve applications of radian measured angles such as area of a sector of a circle, and arc length.

Topics to be studied:

Ratio and Proportion
 Unit Conversions (Metric, US Customary, Time, Temp and Current)
 Numeration (Binary, Hexadecimal, Octal)
 Significant Digits
 Accuracy and Precision
 Relative and Percent Error
 Literal Equations (Area, Volume and Formulas with 1 or more variables)
 Solving Linear Equations
 Writing and Graphing Linear Equations (with modeling/word problem applications)
 Pictorial Representations of Data
 Exponent Laws
 Scientific Notation
 Polygons
 Similar Geometric Figures
 Classifying Angles
 Right Triangle Trig (with applications)
 Trig Functions (Sine, Cosine, Tangent and Fundamental Identities)
 Trig Functions of Any Angle
 Inverse Trig Functions
 Radians (with applications)
 Area of the Sector of a Circle
 Arc Length

Relationship of Course to Program or Discipline Learning Outcomes:

(What program outcomes are being met by this course?)

For general education courses, a listing of the general education competencies that are met.)

| Relationship of Course to Mathematics (MATH) Student Learning Outcomes: | |
|---|---|
| Demonstrate understanding of the language of mathematics, by their use of symbols, definitions, word phrases, and representations. | x |
| Display proficiency in mathematical computations. | x |
| Implement mathematical techniques to solve applied problems. | x |
| Employ appropriate technology to demonstrate knowledge of mathematical concepts. | x |
| Exhibit mastery of core course competencies. | x |
| 10/20/2017 | |

| Relationship of Course to General Education Learning Outcomes: | |
|---|---|
| Composition and Rhetoric Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements. | |
| Science & Technology Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions. | |
| Mathematics & Quantitative Skills Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts. | x |
| Society, Diversity, & Connections Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication. | |
| Human Inquiry & the Past Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills. | |
| The Arts & Creativity Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art. | |
| 5/3/2016 | |

Special requirements of the course: None.

Additional information: None.

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