



WELD 1715

Division: Career and Technical Education

Department: Industrial Technology

Course: WELD 1715

Title: Applied Technical Math

Catalog Description:

This course covers the principles of algebra and geometry as they apply to problem solving in the Career and Technical Education (CTE) division programs. It includes the quadratic equation, exponents and radicals, polynomials, constructions of geometric shapes, the circle concept, and applications of volume and shapes.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 3; Lecture: 3; Lab: 0

Clock/Hour Requirements: 45

Offered for Non-Credit: Yes

Prerequisites: N/A

Corequisites: N/A

Justification:

This basic technical math course qualifies as the math option used for certificates and/or AAS degrees in several of the technical programs. It gives students the background necessary to solve problems which they will encounter on the job. It is recommended by the program advisory committee.

Student Learning Outcomes:

Upon successful completion of this course students will be able to:

- understand the concepts of integers, order of operations, and how to work with formulas
- use simple expressions and equations
- understand how to use variables and constants and apply the basic principles of real numbers
- solve equations that include exponents and radicals
- solve for variables as they apply to polynomials
- know the relationship of points, lines, and planes and how to work with them in drawings
- solve for different angles and know different angular relationships as they apply to segments
- have a basic understanding of triangular relationships
- know and solve the basic properties of different shaped polygons
- understand and work with the basic concepts of a circle
- understand and solve problems using ratios and proportions

- solve problems involving equations, formulas, Ohm's Law, power law, and combinations thereof
- solve problems dealing with AC and DC theory.

Content:

Course objectives will be achieved by providing students with instructional and hands-on experiences in the following areas:

- basic concepts of algebra including integers, formulas, and the order of operations
- basic properties of real numbers and working with expressions and equations
- powers and roots of numbers
- equations which include polynomials
- points, lines, and planes
- angles and triangles
- different shaped polygons
- circles
- AC and DC theory, Ohm's Law, power law, and combinations thereof.

General Education Outcomes:

6) Apply computational skills to a variety of contexts.

Mathematical skills acquired in this course will be applied in future lab settings. Students will compute discipline specific problems and apply mathematical concepts to content specific exercises.

Applied Education Outcomes:

1) Students will acquire entry-level skills specific to and appropriate for employment in their chosen field of study.

Math skills are required in all fields of employment. Mathematic principles specific to the respective trades are taught and assessed by the solving of practical problems which require skills in Algebra and Geometry. The instructor will provide feedback and evaluate testing to assure continuous student progress.

Key Performance Indicators:

Student learning Outcomes will be assessed by two or more of the following Key performance Indicators:

- assignments for each topic and proficiency demonstrated
- end of unit examinations
- pass a final test that specifically addresses problems found in their specific disciplines.
- subsequent courses related to their specific disciplines.

Representative Text and/or Supplies:

- *Practical Problems in Mathematics*, current edition, Delmar Publishers.
- Instructional materials as directed by instructor

Optimum Class Size: 12
Maximum Class Size: 20

Signatures:

I hereby submit this course syllabus:

Alan Palmer, M. Ed., Associate Professor

I hereby find this course consistent with the goals and resources of the Industrial Technology Department:

Alan Hart, AAS, Instructor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)