



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**TECHNICAL MATHEMATICS
INR3716 3 Credit hours**

Student Level:

This course is open to students on the college level in either the freshman or sophomore year and to area high school vocational students.

Catalog Description:

INR 3716 - TECHNICAL MATHEMATICS (3 hrs)

This course is designed to prepare the student for dealing with the problems of industry. It will briefly review basic arithmetic and then move on to application problems (word problems) taken from various industrial disciplines. The focus will be on manipulating weights, measurements, and formulas from basic math through an introduction to algebra, geometry and trigonometry.

Prerequisites:

This course is open to all students who are accepted in technical programs.

Controlling Purpose:

This course is designed to help the student increase their knowledge concerning applying mathematics to the world of work.

Learner Outcomes:

On completion of this course the student will be able to successfully apply basic math skills to related problems in the vocational area.

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

Units Outcomes and Criterion Based Evaluation Key for Core Content:

The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:

A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.

- B = All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.
- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
- F = Failing, will be computed in GPA and hours attempted.
- N = No instruction or training in this area.

UNIT 1: Mathematical Operation						
Outcomes: Upon completion of this unit, the student will be able to successfully add, subtract, multiply, and divide whole numbers fractions, mixed numbers and decimals.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Perform mathematical operations with whole numbers.
						Perform mathematical operations with fractions and mixed numbers.
						Perform mathematical operations with decimal numbers.
						Convert fractions to decimals and vice versa.
						Apply mathematical operations to practical problems.
						Convert standard and metric linear measurements.

UNIT 2: Percentages

Outcomes: Upon completion of this unit, the student will be able to successfully solve problems using percent and averages.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Convert percents to decimals and vice versa.
						Solve simple percentage problems.
						Apply percent in practical applications.

UNIT 3: Ratios And Proportions

Outcomes: Upon completion of this unit, the student will be able to successfully solve problems using ratios and proportions.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Simplify ratios.
						Solve direct proportions.
						Solve inverse proportions.
						Apply ratios and proportions in practical applications.

UNIT 4: Two-Dimensional Geometry

Outcomes: Upon completion of this unit, the student will be able to successfully calculate perimeters and areas of triangles, circles, and polygons.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Calculate perimeters and circumferences.
						Calculate areas in standard and metric units.
						Calculate areas of squares and rectangles.
						Calculate areas of circles and circular figures.
						Calculate areas of triangles, polygons and composite figures.
						Determine dimensions, given the areas of shapes.
						Solves practical problems using perimeter and areas.

UNIT 5: Algebra

Outcomes: Upon completion of this unit, the student will be able to successfully apply rules for order of operations, perform operations on signed numbers and algebraic expressions using substitution, and solve single variable equations using mathematical operations, roots, and powers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Perform operations on signed numbers.
						Solve simple equations using single operations.
						Solve single variable equations using powers and roots.

UNIT 6: Geometry Theories

Outcomes: Upon completion of this unit, the student will be able to successfully determine angular measure in systems of parallel or perpendicular lines, triangles, polygons and circles.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Convert decimal degrees to degrees and minutes and vice versa.
						Determine angular measure and length of sides principles of tangent lines.
						Determine angular measure using a protractor.
						Apply angular measure in practical problems.

UNIT 7: Trigonometric Theories

Outcomes: Upon completion of this unit, the student will be able to successfully use trigonometric functions and Pythagorean theorem to solve right triangles, and law of sines and cosines to solve non-right triangles.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Determine the value of trigonometric functions given angles and vice versa.
						Solve for sides of right triangle, given one side and one angle.
						Solve for angles of right triangle given sides.
						Solve for sides of right triangle using Pythagorean Theorem.
						Solve for sides or angles in oblique triangles using Law of Sines or Law of Cosines.
						Apply trigonometry to practical problems.

Projects Required:

None

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

None

Attendance Policy:

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:

The grading policy will be outlined by the instructor in the course syllabus.

Maximum class size:

Based on classroom occupancy

Course Timeframe:

The U.S. Department of Education, Higher Learning Commission and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

Disability Services Program:

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.