COURSE OUTLINE: MAC101 - APPLIED TRADE CALC

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Course Code: Title	MAC101: APPLIED TRADE CALCULATIONS, CHARTS & TAB
Program Number: Name	6345: GENERAL MACHINIST
Department:	MECHANICAL TECHNIQUES PS
Academic Year:	2024-2025
Course Description:	Upon successful completion, the apprentice is able to apply mathematical principles to trade-specific applications.
Total Credits:	5
Hours/Week:	2
Total Hours:	35
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	The student must achieve a passing grade (minimum 40/80) on the Tests portion of the course evaluation, to pass the course.
Books and Required Resources:	Mathematics for Machine Technology by John C. Peterson, Robert D. Smith Publisher: Cengage Learning Edition: 8 ISBN: 978-1-337-79831-0

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Perform drawing dimension conversions from SI to Imperial, Imperial to SI, and from fractions to decimals.	1.1 Round off decimals to the closest one thousandth of an inch. 1.2 Change common fractions to decimal fractions and decimal fractions to common fractions. 1.3 Add, subtract, multiply and divide common fractions, including reduction, least common denominator, cancellation and reciprocals. 1.4 Add, subtract, multiply and divide decimal fractions. 1.5 Identify and calculate percentages. 1.6 Convert between SI and Imperial systems of measurement,

	using charts and tables.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Solve trade-specific problems using ratios and proportions.	2.1 Set up equations involving direct and inverse ratios and proportions. 2.2 Solve for the unknown quantity in ratios and proportions.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Solve trade specific algebraic equations.	3.1 Perform trade-specific algebraic calculations and functions to solve: -Positive and negative numbers -Addition and subtraction of positive and negative numbers -Multiplication and division of positive and negative numbers -Parentheses and grouping symbols -Algebraic symbols and simple equations -Solution of simple equations -Percentages -Taper per foot -Square root -formulae
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Perform trade-specific plane geometric calculations and functions.	4.1 Perform plane geometric calculations using geometric principles, ratios and proportions, including -Plane geometry -Definitions -Types of angles -Unknown angles in geometric figures -Types and parts of triangles -Unknown angles and sides of triangle -Interior angles of polygons -Axioms 4.2 Add, subtract, multiply and divide angles in terms of degrees, minutes and seconds. 4.3 Convert between decimal degrees and degrees, minutes and seconds. 4.4 Calculate complements and supplements of angles.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Calculate trade-specific perimeters, areas, and volumes (Mensuration).	5.1 Calculate areas, volume and perimeter of geometric figures. 5.2 Calculate area of a circle. 5.3 Calculate the circumference of a circle. 5.4 Calculate the volume of solid figures including: cube, square prism, cylinder.
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Demonstrate use of trade-specific charts, tables, and reference materials.	6.1 Demonstrate use of trade-specific conversion tables/charts to determine: -Application -Type -Format -Magnitudes

	-Dimensions -Graduations -Limitations -Accuracy -Abbreviations -Terminology 6.2 Demonstrate use of trade-specific material and product-related specification and value tables and charts to determine: -Application -Type -Format -Magnitudes -Dimensions -Standards -Abbreviations -Terminology -Graduations -Accuracy -Limitations 6.3 Interpret trade-specific charts and tables to determine: -Drill sizes -Thread size -Cutting speeds -Feed rate -Tapers -Angles -Depth of cut -Cutter locations
Course Outcome 7	**Learning Objectives for Course Outcome 7**
7. Calculate part features and machining parameters using formulae.	7.1 Calculate part features and machining parameters using formulae to determine: -Drill sizes -Thread size -Cutting speed -Feed rate -Tapers -Angles -Depth of cut -Cutter locations

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Quizzes/Assignments	20%
Tests (3 evenly weighted)	80%

Date: August 22, 2024

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.