COURSE OUTLINE: MAC101 - APPLIED TRADE CALC

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Course Code: Title	MAC101: APPLIED TRADE CALCULATIONS, CHARTS & TAB
Program Number: Name	4040: MACHINE SHOP
Department:	MECHANICAL TECHNIQUES PS
Semesters/Terms:	19W
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:	32
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4040 - MACHINE SHOP** VLO 6 Troubleshoot and solve standard mechanical problems by applying mathematics and fundamentals of mechanics.
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
Books and Required Resources:	Mathematics for Machine Technology by John C. Peterson, Robert D. Smith Publisher: Cengage Learning Edition: 7 ISBN: 978-1-133-28145-0

Course Outcomes and Learning Objectives:	Course Outcome 1	Learning Objectives for Course Outcome 1
	Perform drawing dimension conversions from SI to Imperial, Imperial to SI, and from fractions to decimals.	Round off decimals to the closest one thousandth of an inch. Change common fractions to decimal fractions and decimal fractions to common fractions. Add, subtract, multiply and divide common fractions: definitions, reduction, least common denominator, addition, cancellation, reciprocals. Add, subtract, multiply and divide decimal fractions. Identify and calculate percentages. Demonstrate conversions between SI and Imperial systems of measurement: linear units, mass units, charts, tables.
	Course Outcome 2	Learning Objectives for Course Outcome 2

Solve trade-specific problems using ratios and proportions.	Solve trade-specific problems using direct and inverse ratios and proportions.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Perform trade-specific plane geometric calculations and functions.	Perform plane geometric calculations using geometric principles, ratios and proportions: - 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 Add, subtract, multiply and divide angles in terms of degrees, minutes and seconds. Convert decimals to degrees, minutes and seconds. Calculate complements and supplements of angles.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Solve trade specific algebraic equations.	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 5	**Learning Objectives for Course Outcome 5**
Calculate trade-specific perimeters, areas, and volumes (Mensuration).	Calculate areas, volume and perimeter of geometric figures. Calculate area of a circle. Calculate the circumference of a circle. Calculate the volume of solid figures including: cube, square prism, cylinder.
Course Outcome 6	**Learning Objectives for Course Outcome 6**
Demonstrate use of trade-specific charts, tables, and reference materials.	Demonstrate use of trade-specific conversion tables/charts by determining: - Application - Type - Format - Magnitudes - Dimensions - Graduations - Limitations - Accuracy - Abbreviations - Terminology Demonstrate use of trade-specific material and product-related

	specification and value tables and charts by determining: - Application - Type - Format - Magnitudes - Dimensions - Standards - Abbreviations - Terminology - Graduations - Accuracy - Limitations 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**
Calculate part features and machining parameters using formulae.	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	Course Outcome Assessed
Quizzes	20%	1 - 7
Tests (3 evenly weighted)	80%	1 - 7

Date: January 2, 2019

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