COURSE SYLLABUS

Tunxis Community College

Education That Works For a Lifetime

Course Title:	Manufacturing Math II	Date submitted:	May 2019 (AAC: 19-25)
Department:	Advanced Manufacturing Technology		
Curriculum:	Technology Studies		

Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.

Course Code: (eg. ACC 101)	MFG*105
Course Type:	L

A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: Internship M: Seminar P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/ Clinical/Lab Z: Combined Lecture/Studio

Elective Type:	G

AH: Art History E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science

Credit Hours:	3
Developmental: (yes/no)	No
Contact Hours: Lecture:	3
Contact Hours: Clinical:	0
Contact Hours: Lab:	0
Contact Hours: Studio	0
Contact Hours: Other:	0
TOTAL:	3
Class Maximum:	30
Semesters Offered:	Fall, Spring

Prerequisites:

Assessment Test

Corequisites:

None

Other Requirements:

None

Catalog Course Description:

A further study of arithmetic and trigonometric operations applied to manufacturing circumstances. The following geometric entities are studied in detail: the circle, regular and irregular polygons, the right triangle and oblique triangles. The application of angular arithmetic including the study of: angle decimal conversion, the Pythagorean theorem, Sin, Cos, and Tan functions, and the Law of Sines and Law of Cosines.

Topical Outline: List course content in outline format.	1. Angles and Lines A. Define basic geometric terms such as point, line, plane and angle B. Identify perpendicular and parallel lines and planes C. Identify types and sizes of angles D. Add, subtract, multiply and divide angles E. Convert degrees to decimal degrees and conversely 2. Polygons A. Identify regular and irregular polygons B. Determine the interior and exterior angle of a regular polygon C. Identify types and properties of triangles D. Identify types and properties of quadrilaterals E. Identify similar triangles F. Explain geometric principles related to the application of polygons to metalworking tasks 3. Pythagorean Theorem A. Compute the length of any side of a right triangle using the Pythagorean Theorem 4. Circles A. Identify the basic parts of a circle B. Define basic terms used in circular measurement 5. Functions of Angles A. Name and label the basic parts of a right triangle B. State three trigonometric functions for any angle C. Write sine, cosine and tangent ratios for any angle 6. Right Triangle Solutions A. Solve a right triangle given one side and one acute angle B. Solve a right triangle given two sides 7. Law of Sines A. Solve for sides and angles of oblique triangles using the Law of Sines 8. Law of Cosines A. Solve for sides and angles of oblique triangles using the Law of Cosines B. Define basic geometric terms such as point, line, plane and angle C. Perpendicular and parallel lines and planes D. Types and sizes of angles
Outcomes: Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.	Upon successful completion of this course, the student will be able to do the following: 1. add, subtract, multiply and divide angles. 2. convert degrees to decimal degrees and conversely. 3. identify regular polygons and calculate the angles and sides of irregular polygons. 4. compute the length of any side of a right triangle using the Pythagorean Theorem. 5. demonstrate an ability to understand the circle and its parts and apply them to manufacturing related circumstances. 6. write sine, cosine and tangent ratios for any angle. 7. calculate unknown sides and angles for right triangles. 8. perform Sine Bar calculations. 9. demonstrate an ability to use auxiliary lines to for right triangles to solve problems. 10. solve oblique triangle problems using the Law of Sines. 11. solve for sides and angles of oblique angles using the Law of Cosines.

PROGRAM: *(Numbering reflects Program Outcomes as they appear in the college catalog)*

Advanced Manufacturing Machine Technology

1. demonstrate an understanding of Shop Safety
2. demonstrate an understanding of Blueprint Reading and its application in Machine Technology
3. demonstrate an understanding of Precision Layout Procedures
4. demonstrate an understanding of tool geometry for lathe cutting tools
5. demonstrate an understanding of the use and selection of different cutting tools and cutter holders for the Vertical Milling Machine
6. demonstrate an understanding of CNC Programming
7. solve oblique triangle problems using the Law of Sines
8. demonstrate an understanding of Quality Control Tools & Systems and their applications
9. demonstrate an ability to determine the acceptability of manufactured parts based on GDT requirements

GENERAL EDUCATION: *(Numbering reflects General Education Outcomes as they appear in the college catalog)*

7. **Quantitative Reasoning** -Students will learn to recognize, understand, and use the quantitative elements they encounter in various aspects of their lives. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.

Demonstrates: Interprets numerical information and applies sufficient laws of logic and mathematics to solve problems using numbers, symbols, graphs and/or descriptions.

Does Not Demonstrate: Misinterprets numerical information or insufficiently applies laws of logic and mathematics to solve problems using numbers, symbols, graphs and/or descriptions.

Evaluation: List how the above outcomes will be assessed.	Assessment will be based on the following criteria: homework quizzes exams
Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.	Required: No special facilities are required. Desired: None
Textbook(s)	Practical Mathematics For Metalworking Trainees; Roberta Laine; National Tooling and Machining Association; Fort Washington, Md. Latest edition