

COURSE SYLLABUS

Course Title:	Manufacturing Machinery - Benchwork		Date submitted:	9/26/14 (AAC:14-112)
Department:	Business and 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*153	Prerequisites:	
	Course Type:	D/Y	None	
	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	Corequisites:	
	AH: Art History E: English FA: Fine Arts G: General HI: History HU: Humanities LA: Liberal Arts FL: Foreign Language M: Math S: Science SS: Social Science			
	Credit Hours:	2		
	Developmental: (yes/no)	No		
	Lecture:	1		
	Clinical:	0		
	Lab:	2		
Studio:	0			
Other:	0			
TOTAL:	3	Other Requirements:		
Class Maximum:	24			
Semesters Offered:	F/Sp/Su	None		
Ability Based Education (ABE) Statement	At Tunxis Community College students are assessed on the knowledge and skills they have learned. The faculty identified the General Education Abilities critical to students' success in their professional and personal lives. In every class, students are assessed on course abilities, sometimes program abilities, and, in most classes, at least one General Education Ability. Students will receive an evaluation of the degree to which they have demonstrated or not demonstrated that General Education Ability.			
Catalog Course Description:	Provides an introduction in the fundamentals, principles, practices, and tools used in semi-precision and precision layout and in the various tools, methods and procedures for common machine shop benchwork. Topics will include, measurement systems, layout principles, hand tools and power tools.			

Topical Outline:

List course content in outline format.

- A. Basics of Applied Benchwork
 1. The basic duties of a benchworker
 2. The tools used and the operations performed in benchwork
 3. The proper care of bench tools
 4. Accuracy and productivity in benchwork layout procedures
- B. Mechanical Fasteners
 1. The most common mechanical fasteners used in the shop
 2. The uses of the common fasteners used in the shop
 3. Number designation system for bolts and machine screws
- C. Units of Measure
 1. Identify the common linear, fractional, decimal, and metric systems of measuring
 2. The purposes for measurements as related to interchangeability
- D. Semi-precision Measuring Tools and Gages
 1. Identify the semi-precision measuring tools commonly used in the shop
 2. Accurately read the calibrations on shop measuring tools, including metrics
 3. The proper care and use of measuring tools
 4. Identify direct and indirect reading tools
- E. Precision Measuring Tools and Gages
 1. Precision measuring responsibility, reliability, and discrimination
 2. Identify the common precision measuring tools used in the shop
 3. Accurately set and read precision measuring tools, including metric tools
- F. Tolerances and Fits
 1. Define fitting as applied to metalwork
 2. Identify the three general groups of fits discussed
 3. Define the terms of actual size, basic size, limits of size, and tolerance
- G. Non-precision and Semi-precision Layout Tools
 1. Identify the common non-precision and semi-precision layout tools used in the shop
 2. Demonstrate the proper and safe use of non-precision and semi-precision layout tools
- H. Precision Layout Tools
 1. Define Precision Layout
 2. Identify Precision Layout Tools
 3. Demonstrate the proper use and care of precision layout tools
- I. Layout Procedures
 1. Define the necessity of layout as applied to shop practices
 2. Describe layout procedures from print to workpiece
- J. Assembly Tools, Arbor and Shop Presses
 1. Identify the common noncutting hand tools used by the benchworker
 2. Explain the importance of using the proper tool for a given job
 3. Define the correct use and care of a selected tool
- K. Chisels, Files, Scrapers, and Abrasive Cloth
 1. Identify the commonly used cutting hand tools and abrasive cloths used in benchwork
 2. Describe the correct selection, use, and care of hand cutting tools and abrasive cloths

- L. Power hand Drills and Grinders
 - 1. Identify the common hand held bench power tools
 - 2. Define and demonstrate the safe and proper use of hand held bench power tools
- M. Special Benchwork Tools and Procedures
 - 1. Identify special tools and procedures used in benchwork

LABORATORIES:

- A. Demonstrate the basics of Applied Benchwork
 - 1. Identify the tools used in benchwork and perform benchwork operations
 - 2. Exercise the proper care of bench tools
 - 3. Demonstrate accuracy and productivity in benchwork layout procedures
- B. Use of Mechanical Fasteners
 - 1. Identify the most common mechanical fasteners used in the shop
 - 2. Use common shop fasteners
 - 3. Number designation system for bolts and machine screws
- C. Identify Units of Measure
 - 1. Identify the common linear, fractional, decimal, and metric systems of measuring
 - 2. Demonstrate the purposes for measurements as related to interchangeability
- D. Use of Semi-precision Measuring Tools and Gages
 - 1. Identify the semi-precision measuring tools commonly used in the shop
 - 2. Accurately read the calibrations on shop measuring tools, including metrics
 - 3. Demonstrate the proper care and use of measuring tools
 - 4. Identify direct and indirect reading tools
- E. Use of Precision Measuring Tools and Gages
 - 1. Exercises in precision measuring responsibility, reliability, and discrimination
 - 2. Identify the common precision measuring tools used in the shop
 - 3. Accurately set and read precision measuring tools, including metric tools
- F. Exercises in Tolerances and Fits
 - 1. Demonstrate fitting as applied to metalwork
 - 2. Identify the three general groups of fits discussed
 - 3. Define the terms of actual size, basic size, limits of size, and tolerance and demonstrate their use
- G. Use of Non-precision and Semi-precision Layout Tools
 - 1. Identify the common non-precision and semi-precision layout tools used in the shop
 - 2. Demonstrate the proper and safe use of non-precision and semi-precision layout tools
- H. Use of Precision Layout Tools
 - 1. Define and demonstrate Precision Layout
 - 2. Identify Precision Layout Tools
 - 3. Demonstrate the proper use and care of precision layout tools
- I. Apply Layout Procedures
 - 1. Demonstrate the necessity of layout as applied to shop practices
 - 2. Describe layout procedures from print to workpiece with a practical example

	<p>J. Use of Assembly Tools, Arbor and Shop Presses</p> <ol style="list-style-type: none"> 1. Identify the common noncutting hand tools used by the benchworker 2. Demonstrate the importance of using the proper tool for a given job 3. Exercises using the correct use and care of a selected tools <p>K. Use of Chisels, Files, Scrapers, and Abrasive Cloth</p> <ol style="list-style-type: none"> 1. Identify the commonly used cutting hand tools and abrasive cloths used in benchwork 2. Describe the correct selection, use, and care of hand cutting tools and abrasive cloths and demonstrate the use of each <p>L. Use Power Hand Drills and Grinders</p> <ol style="list-style-type: none"> 1. Identify the common hand held bench power tools 2. Demonstrate the safe and proper use of hand held bench power tools <p>M. Use Special Benchwork Tools and Procedures</p> <ol style="list-style-type: none"> 1. Identify special tools and procedures used in benchwork
<p>Outcomes: Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.</p>	<p>Upon successful completion of this course, the student will be able to do the following:</p> <ol style="list-style-type: none"> 1. Select the proper grinding wheel 2. True, balance and dress a grinding wheel 3. demonstrate the ability to know the value and use of cutting fluids 4. demonstrate the ability to use a surface grinder 5. demonstrate the ability to use a cutter grinder <hr/> <p>PROGRAM: <i>(Numbering reflects Program Outcomes as they appear in the college catalog)</i></p> <ol style="list-style-type: none"> 7. demonstrate technical competency in a functional area of technology. The specialization may include, but is not limited to: electricity, computer aided drafting and design, manufacturing, and construction. <hr/> <p>GENERAL EDUCATION: <i>(Numbering reflects General Education Outcomes as they appear in the college catalog)</i></p> <p>None</p>
<p>Evaluation: List how the above outcomes will be assessed.</p>	<p>Assessment will be based on the following criteria:</p> <p>Quizzes Exams Laboratory Assignments</p>
<p>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.</p>	<p>Required:</p> <p>Hand Tools Chisels Hammers Drills Fasteners</p>

	Desired:
Textbook(s)	Check with department chair for list of approved texts.