

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: PMT 1202

COURSE TITLE: Introduction to Machining

PREREQUISITE(S): None

COREQUISITE(S): None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 4

CONTACT HOUR BREAKDOWN:

 Lecture/Discussion: 3

 Laboratory: 1

 Other _____:

FACULTY WORKLOAD POINTS: 3.67

STANDARDIZED CLASS SIZE
ALLOCATION: 24

CATALOG COURSE DESCRIPTION:

This course presents a practical overview of machine shop practices and equipment. It includes and introduction to measuring devices, lathes, milling machines, shapers, grinders and the drill press. Safety practices also receive a strong emphasis in this beginning course.

SUGGESTED TEXT(S): None

IMPLEMENTATION DATE: Winter Term, 1996 (962)

REVIEW OR MODIFICATION DATE: Fall Term, 2002 (20031)
Fall Term, 2009 (20101) - Proposal 2009-11

COURSE TOPICS	<u>CONTACT HOURS PER TOPIC</u>
I. Measuring Tools	4
A. System of Measurement	
1. English System	
2. Metric	
B. Measuring with Rules	
C. The Combination Set	
D. Measuring External Diameters	
E. Measuring Internal Diameters	
F. Depth Measurement	
G. Thread Measurement	
H. Vernier Height Gage and Surface Gage	
I. Dial Indicator	
J. Sine Bar	
II. Bench Series	4
A. General Shop Safety	
B. Preparing Work for Layout	
C. Basic Layout Procedures	
D. Hand and Power Cutting Metal	
E. Filing	
F. Hand Reaming	
G. Belt Sander	
H. Pedestal Grinder	
I. Power Hand Tools	
III. Drill Press	4
A. Safety	
B. Sensitive and Radial Arm Drills	
C. Set-up	
D. Grinding a Drill by Hand	
E. Drilling Operations	
F. Reaming	
G. Tapping	
IV. Lathe	12
A. Safety	
B. Lathe Orientation	
C. Alignment of Work	
D. Grinding a Lathe Tool	
E. Set-up	
F. Turning	

COURSE TOPICS (CONTINUED)	<u>CONTACT HOURS PER TOPIC</u>
<ul style="list-style-type: none"> G. Thread Cutting H. Alignment of Lathe Centers I. Taper Turning 	
V. Vertical Milling	12
<ul style="list-style-type: none"> A. Safety B. Vertical Milling Machine Orientation C. Machine Alignment D. Tooling and Work Set-up E. Milling Operations F. Dividing Head G. Rotary Table 	
VI. Shaper	12
<ul style="list-style-type: none"> A. Safety B. Shaper Orientation C. Machine Set-up D. Machining Operations 	
VII. Surface Grinding	12
<ul style="list-style-type: none"> A. Safety B. Surface Grinder Orientation C. Mounting and Removing Grinding Wheels D. Dressing a Grinding Wheel E. Grinding Operations 	

PROGRAM TITLE: Industrial Management Technology

COURSE TITLE: Introduction to Machining

CIP NUMBER: 0606.200101

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

11.0 DEMONSTRATE APPROPRIATE UNDERSTANDING OF BASIC SCIENCE-- The student will be able to:

11.03 Identify health related problems which may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.

18.0 DEMONSTRATE AN UNDERSTANDING OF TECHNICAL OR INDUSTRIAL COMPETENCIES -- The student will be able to:

18.01 Demonstrate an understanding of technical or industrial competencies as specified in the curriculum frameworks of any postsecondary adult or postsecondary vocational program.

PROGRAM TITLE: Engineering Technology
 COURSE TITLE: Introduction to Machining
 CIP NUMBER: 0606.200101

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

04.0 DEMONSTRATE AN UNDERSTANDING OF SAFETY, HEALTH, AND ENVIRONMENTAL REQUIREMENTS -

The student will be able to:

- 04.01 Communicate any new or revised safety procedures.
- 04.02 Update personnel about current safety guidelines.
- 04.03 Wear appropriate Personal Protective Equipment (PPE).
- 04.04 Follow area-posted safety guidelines.
- 04.05 Demonstrate knowledge of, and follow applicable safety laws and regulations and the environment (e.g., Occupational Safety and Health Administration (OSHA)).
- 04.06 Maintain a clean and safe work environment.
- 04.07 Maintain personal protection equipment.
- 04.08 Report unsafe conditions/practices.
- 04.09 Locate emergency exits and alarms.
- 04.10 Comply with company-established safety practices.
- 04.11 Use appropriate fire fighting procedures.
- 04.12 Apply Occupational Safety Health Administration (OSHA) safety standards properly.
- 04.13 Demonstrate knowledge of when a machine or a process should be stopped to investigate or correct a hazard.
- 04.14 Demonstrate knowledge of regulatory agency fines and requirement for corrective actions.
- 04.15 Demonstrate knowledge of government and company procedures, rules and regulations concerning incident investigations.
- 04.16 Demonstrate knowledge of incident reporting procedures.
- 04.17 Use and evaluate information resources such as MSDS (Material Safety Data Sheets).
- 04.18 Demonstrate knowledge of National Institute of Occupational Safety and Health (NIOSH), Environmental Protection Agency (EPA) and other regulatory agencies recommendations, guidelines and best practices.
- 04.19 Demonstrate knowledge of how to safely identify, handle, monitor and measure hazardous materials.

12.0 DEMONSTRATE PROFICIENCY IN THE PRINCIPLES, CONCEPTS AND APPLICATIONS IN METAL FABRICATION METHODS - The student will be able to:

- 12.01 Understand professionalism in the manufacturing environment.
- 12.02 Understand, use and work with precision numbers.
- 12.03 Interpret mechanical drawings.
- 12.04 Demonstrate the use of geometric dimensioning and tolerancing.
- 12.05 Understand materials, and machining processes.
- 12.06 Demonstrate safe use of hand and power tools.
- 12.07 Identify the use and process in part layout.

LIST PERFORMANCE STANDARD ADDRESSED: (continued)

NUMBER(S): TITLES(S):

- 12.08 Demonstrate a working knowledge of metal forming equipment.
- 12.09 Demonstrate the use of precision steel rulers.
- 12.10 Demonstrate the use of oxy - fuel cutting.
- 12.11 Demonstrate acceptable methods in tungsten inert gas welding.
- 12.12 Demonstrate acceptable methods in gas metal arc welding.
- 12.13 Demonstrate acceptable methods to use a dial indicator.
- 12.14 Explain the use of a height gauge to measure stock.
- 12.15 Identify aircraft sheet metal tools.
- 12.16 Demonstrate acceptable methods hand cutting and forming sheet metal.
- 12.17 Demonstrate the use of layout sheet metal tools.
- 12.18 Demonstrate acceptable methods using micro-counter sinks.
- 12.19 Demonstrate acceptable methods of Riveting solid rivets.
- 12.20 Identify and demonstrate operation of the pneumatic rivet gun.
- 12.21 Demonstrate the use of a rivet gauge set.
- 12.22 Demonstrate acceptable methods using a back rivet set.
- 12.23 Demonstrate acceptable methods using bucking bars.
- 12.24 Demonstrate the use of rivet squeezers and dimpling.
- 12.25 Demonstrate acceptable methods in using a blind riveting.
- 12.26 Identify the axes on a CNC mill.
- 12.27 Demonstrate hand jog features on a CNC mill & CNC lathe.
- 12.28 Demonstrate acceptable methods to use an ironworker.
- 12.29 Demonstrate acceptable methods using a break & shear.
- 12.30 Demonstrate the use of dial calipers.

13.0 DEMONSTRATE PROFICIENCY IN THE PRINCIPLES, CONCEPTS AND APPLICATIONS IN WOODWORKING AND COMPOSITE FABRICATION METHODS - The student will be able to:

- 13.01 Demonstrate the safe and proper use of and the basic adjustments and maintenance for a circular saw according to the manufacturer's recommendations.

14.0 DEMONSTRATE PROFICIENCY IN THE SET-UP AND OPERATION OF MANUAL AND CNC MACHINING CENTERS - The student will be able to:

- 14.01 Set up and maintain a manual lathe and mill.
- 14.02 Demonstrate acceptable processes using a manual lathe and mill.
- 14.03 Demonstrate acceptable control of machining processes.
- 14.04 Identify and define the physics of machine cutting metals.
- 14.05 Demonstrate the characteristics of machining cutting tools.
- 14.06 Define and identify parameters of cutting tool life.
- 14.07 Demonstrate efficient parameters in production processes.
- 14.08 Demonstrate the process to drill and layout holes to a specific size.
- 14.09 Identify baseline machining layout.

LIST PERFORMANCE STANDARD ADDRESSED: (continued)

NUMBER(S): TITLES(S):

- 14.10 Identify manual machining procedures used in CNC programming.
- 14.11 Identify grinding machining practices and processes.
- 14.12 Identify thread types and tooling used in machining.
- 14.13 Identify metal alloys and their properties in machining.
- 14.14 Demonstrate job planning procedures in machining.
- 14.15 Demonstrate procedures to calculate cutting tool speeds and feeds.
- 14.16 Demonstrate methods for accessing machine RPM.
- 14.17 Identify coordinate and primary machining axes.
- 14.18 Define and describe Absolute and incremental coordinates.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: <u>PMT 1202</u>	SEMESTER CREDIT HOURS (CC): <u>3</u> CONTACT HOURS (NCC): _____
COURSE TITLE: <u>Introduction to Machining</u>	

Section 2
TYPE OF COURSE: (Click on the box to check all that apply)

<input type="checkbox"/> AA Elective	<input type="checkbox"/> AS Required Professional Course	<input type="checkbox"/> College Prep
<input checked="" type="checkbox"/> AS Professional Elective	<input type="checkbox"/> AAS Required Professional Course	<input type="checkbox"/> Technical Certificate
<input type="checkbox"/> Other _____	<input type="checkbox"/> PSAV	<input type="checkbox"/> Apprenticeship
<input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

Section 3 (If applicable)
INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

<input type="checkbox"/> Communications	<input type="checkbox"/> Social & Behavioral Sciences	<input type="checkbox"/> Mathematics
<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities	

Section 4
INTELLECTUAL COMPETENCIES:

<input checked="" type="checkbox"/> Reading	<input checked="" type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input checked="" type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input type="checkbox"/> Information Literacy	<input checked="" type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively

Section 5		
LEARNING OUTCOMES		METHOD OF ASSESSMENT
<ul style="list-style-type: none">Identify proper safety procedures in a machining environment		
<ul style="list-style-type: none">Identify proper use of measuring tools		Hands-on test, quizzes, or written test
<ul style="list-style-type: none">Identify components and perform basic tasks using bench series equipment (hand and power cutting, filing, hand reaming, etc)		Hands-on test, quizzes, or written test
<ul style="list-style-type: none">Identify components and perform basic tasks using a drill press		Hands-on test, quizzes, or written test
<ul style="list-style-type: none">Identify components and perform basic tasks using a lathe		Hands-on test, quizzes, or written test
<ul style="list-style-type: none">Identify components and perform basic tasks using a vertical milling machine		Hands-on test, quizzes, or written test
<ul style="list-style-type: none">Identify components and perform basic tasks using a shaping machine		Hands-on test, quizzes, or written test
<ul style="list-style-type: none">Identify components and perform basic tasks using a surface gribder		Hands-on test, quizzes, or written test

Section 6
Name of Person Completing This Form: Ernie Friend Date: 02/11/09