

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: PMT 2213

COURSE TITLE: Advanced Machining I

PREREQUISITE(S): PMT 1202

COREQUISITE(S): None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 4

CONTACT HOUR BREAKDOWN:

Lecture/Discussion:	1
Laboratory:	3
Other _____:	

FACULTY WORKLOAD POINTS: 3.67

STANDARDIZED CLASS SIZE ALLOCATION: 24

CATALOG COURSE DESCRIPTION:

This course concentrates on the lathe series of machines and includes set-up, centering, turning, facing, filing, polishing, burning, thread cutting and other processes common to the lathe series.

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. Safety	2
II. Lathe	58
A. Orientation of Parts	(10)
1. Mounting and Removing Chucks	
2. Mounting and Removing Centers	
3. The Steady Rest and Follower Rest	
B. Alignment	(10)
1. Alignment using a Fixed Object	
2. Alignment using a Dial Indicator	
C. Grinding a HSS Tool bit	(3)
D. Three and Four Jaw Chuck Work	(20)
1. Center Drilling and Facing	
2. Turning to an Accurate Diameter	
3. Turning to a Shoulder	
4. Drilling, Reaming, and Tapping a Hole	
5. Filing and Polishing	
6. Turning Work on Centers	
7. Boring	
8. Knurling	
9. Taper Turning	
E. Threads	(15)
1. Grinding a Threading Tool	
2. Measuring Threads	
3. Cutting External and Internal Threads	
4. Resetting a Threading Tool	

PROGRAM TITLE: Engineering Technology

Specialization Tract:

COURSE TITLE: Advanced Machining I

CIP NUMBER: 1615.061300 AS

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

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.
- 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.
- 12.17 Demonstrate acceptable methods to use a dial indicator.
- 12.18 Explain the use of a height gauge to measure stock.
- 12.19 Identify aircraft sheet metal tools.
- 12.20 Demonstrate acceptable methods hand cutting and forming sheet metal.
- 12.21 Demonstrate the use of layout sheet metal tools.
- 12.22 Demonstrate acceptable methods using micro-counter sinks.
- 12.23 Demonstrate acceptable methods of Riveting solid rivets.
- 12.24 Identify and demonstrate operation of the pneumatic rivet gun.
- 12.25 Demonstrate the use of a rivet gauge set.
- 12.26 Demonstrate acceptable methods using a back rivet set.
- 12.27 Demonstrate acceptable methods using bucking bars.
- 12.28 Demonstrate the use of rivet squeezers and dimpling.
- 12.29 Demonstrate acceptable methods in using a blind riveting.
- 12.30 Identify the axes on a CNC mill.
- 12.31 Demonstrate hand jog features on a CNC mill & CNC lathe.
- 12.32 Demonstrate acceptable methods to use an ironworker.
- 12.33 Demonstrate acceptable methods using a break & shear.
- 12.34 Demonstrate the use of dial calipers.

## LIST PERFORMANCE STANDARD ADDRESSED: (Continued)

NUMBER(S):            TITLES(S):

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.
- 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.
- 14.19 Identify the five CNC drive components.
- 14.20 Demonstrate rapid travel and interpolation.
- 14.21 Identify coordinate and primary machining axes.
- 14.22 Identify and define industrial machining and turning centers.
- 14.23 Identify processes for program creation and data management.
- 14.24 Demonstrate acceptable procedures in starting CNC machines.
- 14.25 Demonstrate the CNC machine controls for set up and operation.
- 14.26 Demonstrate acceptable procedures to set up a CNC Machining center.
- 14.27 Demonstrate acceptable procedures to run programs using a CNC machining center.
- 14.28 Demonstrate acceptable procedures to generate a CNC program.
- 14.29 Demonstrate acceptable procedures in CNC job planning.
- 14.30 Identify cutting tools collets and holding fixtures.
- 14.31 Identify CNC tooling and applications.
- 14.32 Define CNC programming code words and conventions.
- 14.33 Define and demonstrate CNC program fixed cycles.



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

<b>Section 1</b> COURSE PREFIX AND NUMBER: <b><u>PMT 2213</u></b>	SEMESTER CREDIT HOURS: <b><u>3</u></b>
COURSE TITLE: <b><u>Advanced Machining I</u></b>	

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

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

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

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

**Section 4**  
 INTELLECTUAL COMPETENCIES:

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

	<b>LEARNING OUTCOMES</b>	<b>METHOD OF ASSESSMENT</b>
•	Mechanical Lathe Safety	Hands-on test, quizzes, or written test
•	Orientation of Parts for a Mechanical Lathe	Hands-on test, quizzes, or written test
•	Mechanical Lathe Alignment	Hands-on test, quizzes, or written test
•	Grinding a HSS Mechanical Lathe Tool bit	Hands-on exercises, written quizzes, or tests
•	Three and Four Jaw Chuck Work functions	Hands-on test, quizzes, or written test
•	Threads identification, fabrication and repair	Hands-on tests, written quizzes or tests
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**Section 6**  
 Name of Person Completing This Form: Darrell J. High      Date: 05/07/07