Southern Polytechnic State University  
MET 1321 – Machining and Welding  
(1-3-2)

MET 1321  An introduction to the use and operation of selected industrial machinery, various machining operations, selected welding processes and precision measuring instruments. Laboratory project will emphasize safety and apply selected manufacturing processes, various inspection processes, fixturing and engineering materials.

Prerequisite:  MET 1311 or concurrently.
Required:  Required course.

Instructor:  Randy Emert  
Assistant Professor, MET

Office Hours:  T, TH 1:00-2:00  
Q151  
678-915-7406  
remert@spsu.edu

Textbook:  ToolingU.com/bookstore

Outcomes:  Students completing MET1321 will have the ability to:  
1. Perform engineering measurement with instruments commensurate with industry practice.  
2. Be proficient in the setup and use of various machining tools and practices to manufacture parts.  
3. Apply industrial safety standards in a laboratory setting while observing and using machining tools and equipment.  
4. Demonstrate an understanding of tolerances with the completion of machining and welding projects.

Grading:  
Tooling U 20% 90-100  A  
Assignments 10% 80-89  B  
Labs 25% 70-79  C  
Projects 25% 60-69  D  
Tests 20% 0-59  F

ToolingU:  ToolingU assignments will be required each week. The goal is to receive an 80 or above on the ToolingU assignment in order to pass that assignment. You will be given three chances to receive an 80.

Assignments:  Due dates will be assigned in class.

Labs:  Labs are assigned daily and/or weekly. All laboratory projects are completed in the SPSU laboratories.

Project:  Successive labs culminate in the final machining project. Each lab will build skills that are represented in the project.

Tests:  Two tests on welding and two tests on machining will be given. Test questions will cover material from ToolingU, assignments, lecture, labs, and projects.
Late Work:  Late labs and projects will not be accepted. Makeup tests are not given. However, if prior arrangements have been made or due to extenuating circumstances exceptions may be granted.

Honor Code

As a member of the Southern Polytechnic State University community of scholars, I understand that my actions are not only a reflection on myself, but also a reflection on the University and the larger body of scholars of which it is a part. Acting unethically, no matter how minor the offense, will be detrimental to my academic progress and self-image. It will also adversely affect all students, faculty, staff, the reputation of this University, and the value of the degrees it awards. Whether on campus or online, I understand that it is not only my personal responsibility, but also a duty to the entire SPSU community that I act in a manner consistent with the highest level of academic integrity. Therefore, I promise that as a member of the Southern Polytechnic State University community, I will not participate in any form of academic misconduct. I also understand that it is my responsibility to hold others to these same standards by addressing actions that deviate from the University-wide commitment to working, living, and learning in an environment conducive to a quality education. Thus, I affirm and adopt this honor code of Southern Polytechnic State University.

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<td><strong>Machining</strong></td>
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| WK 1 | Safety for Mechanical Work  
Basics of the Engine Lathe |
| WK 2 | Overview of the Engine Lathe Setup  
Engine Lathe Operation |
| WK 3 | Overview of Threads  
Threading on the Engine Lathe |
| WK 4 | Basics of the Manual Mill  
Overview of Manual Mill Setup |
| WK 5 | Manual Mill Operation  
Holemaking on the Mill |
| **Welding** | |
| WK 6 | Arc Welding Safety  
What is Arc Welding |
| WK 7 | Arc Welding Processes  
Overview of Weld Types |
| WK 8 | Arc Welding Symbols and Codes  
SMAW Applications |
| WK 9 | GMAW Applications  
GTAW Applications |
| WK 10 | FCAW Applications  
Visual Inspections |

This syllabus including scheduling and grading may be modified based on mutual agreement of instructor and student.