IT 209 Manufacturing Processes Laboratory

Instructors: Maxwell Burke & Kelyn Young

Class Hours:
Lecture: Fri: 11:00am – 11:50am
Lab: Sec. 001 Tue/Thu: 01:00pm – 02:50pm
Lab: Sec. 002 Wed/Fri: 01:00pm – 02:50pm

Class Room:
Lecture: EGRA 0207
Lab:

Lab: EGRD 0014B

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Email:
Maxwell: maburke@siu.edu Kelyn: kryoung@siu.edu

Textbook:

Course Objective:
To enable students to understand the theory and principles of traditional manufacturing in industry such as safety, use of precision measuring instruments, and operation of manufacturing equipment by means of an in-depth, hands-on course in which they manufacture items in an industrial type environment.

Course Format:
Class/Lab Attendance & Participation.................................05%
Lab Projects (5 Required).................................................25%
Exam 1 .................................................................20%
Exam 2 .................................................................20%
Quizzes...............................................................20%
Research Paper.........................................................10%

Grading Scale:
A: 100% - 90%
B: 89.99% - 80%
C: 79.99% - 70%
D: 69.99% - 60%
F: Less than 60%

Final Exam:
Date: May 6, 2014 Time: 12:50 – 2:50pm Location: ENGR 0207

Academic Conduct:
Cheating on examinations, submitting work of other students as your own, or plagiarism in any form will result in penalties ranging from an F on the assignment to expulsion from the university, depending on the seriousness of the offense.

**Grading Policy:**

Missed exams have a 30% penalty unless the instructor, prior to the regularly scheduled exam, approves an appropriate excuse. The missed exam must be completed on the makeup date set by the instructor. Quizzes will NOT be made up.

**Emergency Procedures:**

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on the BERT’s website at www.bert.siu.edu, Department of Public Safety’s website www.dps.siu.edu (disaster drop down) and in the Emergency Response Guidelines pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.
Upon completion of this course, students should know/understand the following:

Section A – Shop Safety
- Identify common shop hazards
- Identify and use common shop safety equipment

Section B – Hand Tools
- Identify the proper tool for a given job
- Determine the correct use of a selected tool

Section C – Dimensional Measurement
- Identify and use various kinds of rules in shop measurements
- Use dial and digital micrometers and calipers
- Measure and record dimensions using outside micrometers to an accuracy of +/-0.001 inch

Section E – Layout
- Prepare the workpiece for layout
- Measure for and scribe layout lines on the workpiece outside the various features

Section G – Sawing Machines
- Properly use vertical and horizontal band machines in cutoff applications

Section H – Drilling Machines
- Properly use drilling machines in drilling, countersinking, counterboring, and reaming operations
- Use Decimal Equivalent Chart for Drills

Section I – Turning Machines
- Identify the important components and controls of a lathe and their functions
- Properly perform basic functions on a lathe

Section J – Vertical Spindle Milling Machines
- Identify the important components and controls on a vertical milling machine
- Properly perform basic functions on a vertical milling machine

Section L – Grinding and Abrasive Machining Processes
- Truing and dressing of grinding wheel
- Correctly position a single-point diamond dresser in relation to the grinding wheel

Section M – Computer Numerical Control
- Identify the programmable axes on a CNC machining or turning center
- Identify preparatory and miscellaneous function commands
- Describe interpolation modes

Welding – Arc, MIG, and Acetylene/Oxygen
- Understand basic principles of welding operations
- Define welding terminology
- Demonstrate ability to properly use the welding processes to create Butt, Lap, and T-Joint welds
# IT 209 Manufacturing Processes
## READING OUTLINE

WEEKLY READING ASSIGNMENTS: Topics will be covered on the date shown and are expected to have been *previously* read.

QUIZ INFO: There will be a weekly quiz over material from each previous lecture / reading assignment (11 total).

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
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<tbody>
<tr>
<td>January 17</td>
<td>Introduction and Lab Tour</td>
<td>None</td>
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<tr>
<td>January 24</td>
<td>Safety and Hand Tools</td>
<td>Pages: 6-13; 45-66</td>
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<td>January 31</td>
<td>Dimensional Measurements*</td>
<td>Pages: 87-145</td>
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<td>February 7</td>
<td>Blueprint Reading and Layout</td>
<td>Pages: 26-33; 250-257</td>
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<td>February 14</td>
<td>Sawing Operations</td>
<td>Pages: 326-340</td>
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<td>February 21</td>
<td>Welding Operations</td>
<td>Pages: Handout</td>
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<tr>
<td>February 28</td>
<td>Drilling Operations</td>
<td>Pages: 341-381</td>
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<tr>
<td>March 7</td>
<td>Exam 1</td>
<td>Pages: None</td>
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<td>March 14</td>
<td>Spring Break</td>
<td>Pages: None</td>
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<tr>
<td>March 21</td>
<td>Tapping Operations</td>
<td>Pages: 67-80</td>
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<td>March 28</td>
<td>Milling Operations</td>
<td>Pages: 511-543</td>
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<td>April 4</td>
<td>Turning Operations</td>
<td>Pages: 383-510</td>
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<td>April 11</td>
<td>Grinding Operations</td>
<td>Pages: 81-86; 585-658</td>
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<td>April 18</td>
<td>Computer Numerical Control (CNC)</td>
<td>Pages: 659-717</td>
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<td>April 25</td>
<td>Turn in Research Paper</td>
<td>None</td>
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<td>May 2</td>
<td>Last Day of Labs/Review for Final Exam</td>
<td>None</td>
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<td>May 6</td>
<td>Final Exam</td>
<td>None</td>
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Schedule is not set in stone but will be followed to as closely as possible. Any changes will be posted on Desire2Learn and announced in class.

*Lab sections (Tuesday and Thursday 1:00-2:50, Wednesday and Friday 1:00-2:50) will begin after this class period.