MTT244 Lathe/Mill/Grind IV Syllabus

Course Information

Credits 6
Campus Washburn Institute of Technology
Address 5724 SW Huntoon
City/State/Zip Topeka, Kansas 66604
Office Fax 785-273-7080

Description
Instruction will be given in the form of lectures, hand-outs, videotapes, shop demonstrations, shop assignments and text book assignments. Students will perform required setups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feeds and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to the satisfaction of the instructor. Students may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands on abilities.

Textbooks


Student Learning Outcomes:
A. Communicate effectively
B. Integrate technology
C. Learn effectively
D. Demonstrate cooperative teamwork skills
E. Apply safety in the workplace
F. Think critically and creatively
G. Demonstrate responsible work ethics

Competencies
1. Determine cause of milling problems
2. Correct milling problems
3. Perform tools post grinding operations
4. Machine parts using climb milling
5. Investigate metallurgical processes
6. Anneal materials to specifications
7. Determine heat treating temperatures
8. Harden material to specifications

CNC Operations
1. Conduct hazard analysis for CNC lathe & mill.
2. Handwritten CNC programs using G & M codes.
3. Perform software comm. between PC & CNC.
4. Enter CNC Program into control.
5. Enter program in MDI.
6. Edit CNC program.
7. Perform sequence search to restart of edit program
8. Execute CNC program seq. from 0 to point of ref.
9. Execute emergency stop and restart
10. Interrupt auto cycle manually to stop trouble
11. Orient machine axis with holding devices.
12. Thread ID and OD surfaces
13. Determine spindle speed and feed rate
14. Perform facing operations to rough or finish surface
15. Perform turning operation to rough or finish surface
16. Adjust tool offsets
17. Verify CNC program prior to executing program seq.
18. Bore cylindrical surface on CNC machine
19. Power up & power down CNC machine
20. Plan CNC machining operations
21. Adjust cutter compen. to maintain accuracy of cuts
22. Ream holes to specifications with CNC lathe & mill

Guidelines for Success

Assessment Plan
Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution’s technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Grading Rationale and Grading Scale
Grading is based on the quality of shop assignments, attendance, tests and quiz scores.

<table>
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<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90% - 100%</td>
<td>A</td>
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<tr>
<td>80% - 89%</td>
<td>B</td>
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<tr>
<td>70% - 79%</td>
<td>C</td>
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<tr>
<td>60% - 69%</td>
<td>D</td>
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<tr>
<td>Below 60%</td>
<td>F</td>
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The minimum acceptable passing grade is C. The total grade will be calculated using the
following formula: Attendance = 10%, shop assignments = 30%, tests = 20% and quizzes = 10%, Semester final = 30%. 100% attendance adds 5% to the final score, less than 90% attendance deducts 5% from the final score.

**Attendance**
Attendance is required. Please see instructor for make-up policy for excused and school related absences.

**Disability**
The Special Support Services (SSS) Office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Institute of Technology for persons with disabilities. Qualified students with disabilities MUST register and provide documentation with the office to be eligible for services. New requests for accommodations should be submitted two months or more prior to the date services should begin; however, contact the SSS Office as soon as a need may arise. Depending on the accommodation request, four to eight week lead time may be needed for timely and effective provision of services. SSS coordinates and assist in arranging services it deems appropriate of eligible students on a case-by-case basis.

If you are a student with a disability that may substantially limit your ability to participate in this class and believe you will need accommodations, it is your responsibility to contact:

Special Support Services Coordinator  
Phone: 785-228-6356  
E-Mail: ssscoordinator@washburn.edu