

Washtenaw Community College Comprehensive Report

MTT 111 Machine Shop Theory and Practice Effective Term: Fall 2022

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Advanced Manufacturing
Discipline: Machine Tool Technology
Course Number: 111
Org Number: 14440
Full Course Title: Machine Shop Theory and Practice
Transcript Title: Mach Shop Ther&Prac
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Inactivation
Change Information:

Other:

Rationale: We are removing MTT 111. Traditional machining has been replaced with advanced machining tools used in the Numerical Control department (CNC). With the old machine tool setup and operation program gone this class is no longer needed. In the past few years we have only had a few students through this class most being apprentices not in a certificate program. We can substitute NCT 101 and NCT 110 in its place to give our students in an apprentice program better skill sets for their work environment. Some of the core competencies from the machine tool program are being brought forward into the NCT 101 and NCT 110. The goal will be to transition from manual equipment to hybrid equipment by adding CNC controls to manual machines allowing them to be used either way. These types of machines are what we see in companies like Toyota, Magna, and Milan Metals. Advisory board has requested a stronger CNC-related skills.

Proposed Start Semester: Fall 2021

Course Description: This course is a second level course in machine tool operation. Topics that will be covered include: safety, precision measurement, feeds and speeds, rotary tools and turning tools. In addition to the above, students will gain valuable "hands-on" experience learning advanced operations on the sawing machines, engine lathes, milling machines and grinding machines.

Course Credit Hours

Variable hours: No

Credits: 4

Lecture Hours: Instructor: 45 **Student:** 45

Lab: Instructor: 45 **Student:** 45

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 90 **Student:** 90

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Level 2

Requisites

Prerequisite

MEC 101 minimum grade "C"; may enroll concurrently and

Prerequisite

MTT 102 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Complete advanced set-up and machining processes on traditional lathes.

Assessment 1

Assessment Tool: Capstone Project to be machined in lab

Assessment Date: Fall 2015

Assessment Cycle: Each Semester

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Department Rubric

Standard of success to be used for this assessment: 75% of all students will achieve 75% or greater.

Who will score and analyze the data: department faculty

2. Complete advanced set-up and machining processes on traditional milling machines.

Assessment 1

Assessment Tool: Capstone Project to be machined in lab

Assessment Date: Fall 2015

Assessment Cycle: Each Semester

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Department Rubric

Standard of success to be used for this assessment: 75% of all students will receive 75% or greater.

Who will score and analyze the data: department faculty

3. Grind parts flat and to specified angles.

Assessment 1

Assessment Tool: Capstone Project to be machined in lab

Assessment Date: Fall 2015

Assessment Cycle: Each Semester

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Department Rubric

Standard of success to be used for this assessment: 75% of all students will achieve 75% or greater.

Who will score and analyze the data: department faculty

4. Accurately measure using precision measurement tools.

Assessment 1

Assessment Tool: Capstone Project to be machined in lab

Assessment Date: Fall 2015

Assessment Cycle: Each Semester

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Department Rubric

Standard of success to be used for this assessment: 75% of all students will achieve 75% or greater.

Who will score and analyze the data: department faculty

Course Objectives

1. Recognize safe and unsafe practices in the shop.
2. Pass seven safety quizzes before working on major projects.
3. Identify the parts of a dial caliper.
4. Measure using a dial caliper.
5. Identify the parts of a vernier height gauge.
6. Measure using a vernier height gauge.
7. Identify the parts of a micrometer.
8. Use an optical comparator.
9. Use a combination square, bevel edge solid square, cylindrical square with dial test indicator, angle plates and surface gauge at the surface plates.
10. Locate the center of a round feature at a vertical mill using a dial test indicator.
11. Identify Taper, Plug, Bottom taps and their uses.
12. Calculate the tap drill size for a given threaded hole.
13. Use taps properly.
14. Use dies properly.
15. Mount the tools into the proper tool holders at the machine tools.
16. Calculate the appropriate spindle speed for a given machining operation, tool type and part material.
17. Calculate the appropriate feed rate for a given machining operation, tool type and part material.
18. Operate the vertical milling machines safely.
19. Operate the engines lathes safely.
20. Demonstrate cutting operations using the engine lathes by machining their projects.
21. Operate the manual surface grinders safely.
22. Demonstrate trueing and dressing a grinding wheel at the surface grinder.
23. Demonstrate surface grinding operations by surface grinding the top and bottom faces of a steel part.
24. Measure parts using a micrometer.
25. Center a round feature at the lathe using a dial test indicator.
26. Grind angles and tapers to specification.
27. Thread at the lathes.
28. Bore at the lathe.
29. Mill single and compound angles at the mill.
30. Align the vise to the table and the head to table at a vertical mill.
31. Set angles using gauge blocks and sine-bar.

New Resources for Course

Course Textbooks/Resources

Textbooks

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Allan Coleman</i>	<i>Faculty Preparer</i>	<i>Nov 24, 2021</i>
Department Chair/Area Director: <i>Allan Coleman</i>	<i>Recommend Approval</i>	<i>Dec 02, 2021</i>
Dean: <i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Dec 05, 2021</i>
Curriculum Committee Chair: <i>Randy Van Wagnen</i>	<i>Reviewed</i>	<i>Feb 22, 2022</i>
Assessment Committee Chair:		
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Feb 23, 2022</i>

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Department: Industrial Technology

Discipline: Machine Tool Technology

Course Number: 111

Org Number: 14440

Full Course Title: Machine Shop Theory and Practice

Transcript Title: Mach Shop Ther&Prac

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission: Course Change

Change Information:

Consultation with all departments affected by this course is required.

Course description

Pre-requisite, co-requisite, or enrollment restrictions

Outcomes/Assessment

Objectives/Evaluation

Rationale: MTT 111 is now part of a new certificate. Prerequisites as well as outcome and objective changes are required.

Proposed Start Semester: Fall 2015

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Assessment Cycle: Each Semester

Course section(s)/other population: All

Number students to be assessed: All

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Standard of success to be used for this assessment: 75% of all students will achieve 75% or greater.

Who will score and analyze the data: department faculty

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Matched Outcomes

New Resources for Course

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Manuals
Periodicals
Software

Equipment/Facilities

Level III classroom

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Thomas Penird</i>	<i>Faculty Preparer</i>	<i>Feb 18, 2015</i>
Department Chair/Area Director: <i>Thomas Penird</i>	<i>Recommend Approval</i>	<i>Feb 18, 2015</i>
Dean: <i>Brandon Tucker</i>	<i>Recommend Approval</i>	<i>Feb 23, 2015</i>
Vice President for Instruction: <i>Bill Abernethy</i>	<i>Approve</i>	<i>Mar 16, 2015</i>