

Washtenaw Community College Comprehensive Report

NCT 100 Foundation Concepts for Manufacturing (CNC) Effective Term: Fall 2022

Course Cover

College: Advanced Technologies and Public Service Careers

Division: Advanced Technologies and Public Service Careers

Department: Advanced Manufacturing

Discipline: Numerical Control

Course Number: 100

Org Number: 14400

Full Course Title: Foundation Concepts for Manufacturing (CNC)

Transcript Title: Foundation Manufacturing (CNC)

Is Consultation with other department(s) required: No

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

Reason for Submission: New Course

Change Information:

Rationale: JLG - update to credit hours and title 11/24/21. This is part of a program update replacing MTT 102 as recommended by advisory board members and department faculty. This course will expose students to equipment they are more likely to see in the industry. Traditional machines are being replaced with hybrid CNC machinery. Students working at local companies such as Toyota and Magna are currently working with these hybrid systems. This course will prepare students for the NCT 101 and NCT 110 course updates that follow in the curriculum.

Proposed Start Semester: Winter 2022

Course Description: In this course, students will explore a variety of different machining technologies including computer numerical control (CNC), traditional, and hybrid machine tools for the purpose of later integration. Students will be introduced to projects on CNC machining centers and computer-aided design/computer-aided modeling (CAD/CAM) systems, additive manufacturing as well as other technologies used to manufacture parts. This course will prepare students to succeed in NCT 101 and other courses in the Mechatronics program. Students should have a basic familiarity with computers for this course.

Course Credit Hours

Variable hours: No

Credits: 3

Lecture Hours: Instructor: 30 Student: 30

Lab: Instructor: 45 Student: 45

Clinical: Instructor: 0 Student: 0

Total Contact Hours: Instructor: 75 Student: 75

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

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Demonstrate use of appropriate gauges to measure part dimensions.

Assessment 1

Assessment Tool: Student achievement checklist

Assessment Date: Winter 2022

Assessment Cycle: Annually

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of all students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

2. Demonstrate knowledge of machine axis and basic operation of manufacturing equipment.

Assessment 1

Assessment Tool: Student achievement checklist

Assessment Date: Winter 2022

Assessment Cycle: Annually

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of all students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Obtain part dimension results using the appropriate measuring tool.
2. Demonstrate safe operation of CNC mills and lathes with existing part programs.
3. Create a part within tolerance using a CNC mill.
4. Understand introductory manufacturing terminology.
5. Identify the primary axis for CNC mills.
6. Identify the primary axis for CNC lathes.
7. Create a part within tolerance using a manual/hybrid lathe.
8. Create a part within tolerance using a manual/hybrid mill.
9. Choose a machining process plan to create a part.
10. Define introductory G and M codes in a part program.

New Resources for Course

Course Textbooks/Resources

Textbooks

Fitzpatrick, M., Smith, K.. *Machining and CNC Technology*, 4th or newer ed. McGraw-Hill Education, 2019, ISBN: 9781260047851.

Manuals

Periodicals

Software

Fusion 360. Autodesk, Current ed.

Software has free education use license. This is also available in on-campus lab.

Equipment/Facilities

Level III classroom

Other: CNC Lab and computer lab

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Allan Coleman</i>	<i>Faculty Preparer</i>	<i>Aug 17, 2021</i>
Department Chair/Area Director: <i>Allan Coleman</i>	<i>Recommend Approval</i>	<i>Aug 17, 2021</i>
Dean: <i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Aug 19, 2021</i>
Curriculum Committee Chair: <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Feb 07, 2022</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Feb 10, 2022</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Feb 11, 2022</i>