Washtenaw Community College Comprehensive Report

NCT 244 Advanced Manufacturing Capstone (CNC)
Effective Term: Winter 2024

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Advanced Manufacturing
Discipline: Numerical Control
Course Number: 244
Org Number: 14400
Full Course Title: Advanced Manufacturing Capstone (CNC)
Transcript Title: Adv Manufacturing Capstone
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Web Page
Reason for Submission: New Course
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: Request for full approval. Minor changes to outcomes/objectives from conditional submission.
Proposed Start Semester: Winter 2023
Course Description: In this course, students will use skills learned in the advanced manufacturing program to design and build complex project(s) to solve a problem. To create these projects, students will use CNC and manual machinery, as well as create machine code programs (G-Code) manually and with CAD/CAM software. Students will create detailed drawings of their project with CAD software. Process plans, detailed set up sheets including required tooling and cutting conditions will be developed to meet industry standards.

Course Credit Hours

Variable hours: No
Credits: 3
Lecture Hours: Instructor: 15 **Student:** 15
Lab: Instructor: 60 **Student:** 60
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 4

Requisites
   Prerequisite
   NCT 121 minimum grade "C+"
   and
   Prerequisite
   NCT 123 minimum grade "C+"
   and
   Prerequisite
   NCT 221 minimum grade "C+"; may enroll concurrently

General Education

Request Course Transfer
   Proposed For:

Student Learning Outcomes

1. Design a project to solve a problem using CAD/CAM software according to industry standards and safety practices.
   Assessment 1
      Assessment Tool: Outcome related achievement checklist
      Assessment Date: Winter 2025
      Assessment Cycle: Every Three Years
      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 students will score 70% or higher.
      Who will score and analyze the data: Departmental faculty

2. Construct a project to solve a problem using CNC machines, programs, and CAD/CAM software according to industry standards and safety practices.
   Assessment 1
      Assessment Tool: Outcome-related achievement checklist
      Assessment Date: Winter 2025
      Assessment Cycle: Every Three Years
      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 students will score 70% or higher.
      Who will score and analyze the data: Departmental faculty

Course Objectives
   1. Design a project using CAD software.
   2. Analyze a CAD model and create part drawings (blueprints) for a project.
   3. Develop a process plan to create a project that includes materials, machinery, tooling, fixtures and cutting conditions.
   4. Analyze a part drawing and develop hand-written programs using G & M codes.
   5. Analyze a CAD model and create machine programs using CAM software.
   6. Build and set up projects and tooling using available CNC machinery, including CNC mill and lathe components.
   7. Evaluate instructor-modified programs and correct the errors.

New Resources for Course

Course Textbooks/Resources
Textbooks
Manuals
Periodicals
Software

Equipment/Facilities
Level III classroom
Computer workstations/lab
Other: CNC machine lab

Reviewer	Action	Date
Faculty Preparer:		
Allan Coleman	*Faculty Preparer*	*Jan 07, 2023*
Department Chair/Area Director:		
Allan Coleman	*Recommend Approval*	*Jan 07, 2023*
Dean:		
Jimmie Baber	*Recommend Approval*	*Jan 09, 2023*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Mar 24, 2023*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Mar 30, 2023*
Vice President for Instruction:		
Victor Vega	*Approve*	*Apr 07, 2023*