Washtenaw Community College Comprehensive Report

NCT 101 Introduction to Computerized Machining (CNC) - I
Effective Term: Fall 2011

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Advanced Manufacturing
Discipline: Numerical Control
Course Number: 101
Org Number: 14400
Full Course Title: Introduction to Computerized Machining (CNC) - I
Transcript Title: Intro Comp Machining(CNC) - I
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:
    Consultation with all departments affected by this course is required.
Rationale: Conditionally approved course seeking full approval
Proposed Start Semester: Spring/Summer 2011
Course Description: This is the first course of the numerical control series. Students are exposed to various aspects of automated machining centers used in automated manufacturing. Studies include an introduction to controllers, fundamentals of set-up and operation, programming CNC controllers, CAD CAM software and simulation software. This course contains material previously taught in NCT 112.

Course Credit Hours

Variable hours: No
Credits: 2
Lecture Hours: Instructor: 30 **Student:** 30
Lab: Instructor: 30 **Student:** 30
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 60 **Student:** 60
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

Requisites

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Students will improve ability to recognize and apply nomenclature to CNC controllers.
   Assessment 1
   Assessment Tool: Pre Test - Post Test This tool is utilized to identify those students returning for retraining and identify improvement.
   Assessment Date: Fall 2011
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Immersive software scores and shows Pre-test, post-test results
   Standard of success to be used for this assessment: There will be a minimum increase of 30% in score on average from the combined pre-test to the combined post-test results, for all students.
   Who will score and analyze the data: Departmental Faculty

2. Identify the layers of the machine tool controllers.
   Assessment 1
   Assessment Tool: Quizzes
   Assessment Date: Fall 2011
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Quizzes are scored using an answer key
   Standard of success to be used for this assessment: 75% of the students will score 75% or greater on all questions selected.
   Who will score and analyze the data: Department Faculty

3. Recognize setup and operation procedures needed to manufacture parts.
   Assessment 1
   Assessment Tool: Project
   Assessment Date: Fall 2011
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Students projects (parts) will be determined complete or incomplete.
   Standard of success to be used for this assessment: 75% of the students will be successful at completing all parts.
   Who will score and analyze the data: Department Faculty

4. Apply the key processes in creating geometry CAD CAM system.
   Assessment 1
   Assessment Tool: Project
   Assessment Date: Fall 2011
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Students will use the software to develop geometry for a capstone project at the CNC machine tool. The project will be evaluated using a rubric.
   Standard of success to be used for this assessment: The overall average score of the student project will be 75% (3of 4 or better)
   Who will score and analyze the data: Department Faculty

Course Objectives

1. Differentiate between CNC and NC.
2. Recognize history related to NC and CNC.
3. Recognize terminology and abbreviations associated with CNC industry. The following is a list of some of the terms students will become familiar with: CNC/DNC, DRO, Interpolation, CDC/TLO/Gage Lengths, Work Offsets, Tool Pallets, Post processors.
4. Recognize layers of the NC controllers.
5. Calculate speeds and feeds.
6. Identify key miscellaneous codes, required to activate various machine tool conditions within program modules.
7. Construct simple programs and run the parts at the CNC machine tools.
8. Recognize the key concepts, including: Fixture alignment, Work Offset, Tool Length Offsets, Cutter Diameter Compensation, preparatory codes.
9. Recognize key concepts to CAD/CAM systems, including: Layer and view control, geometry creation, edit, trim, break, copy and move geometry.

New Resources for Course

Course Textbooks/Resources
Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		
Thomas Penird	*Faculty Preparer*	*Nov 19, 2010*
Department Chair/Area Director:		
Thomas Penird	*Recommend Approval*	*Nov 20, 2010*
Dean:		
Granville Lee	*Recommend Approval*	*Nov 23, 2010*
Curriculum Committee Chair:		
Kelley Gottschang	*Recommend Approval*	*Mar 14, 2011*
Assessment Committee Chair:		
Rosemary Rader	*Recommend Approval*	*Mar 14, 2011*
Vice President for Instruction:		
Stuart Blacklaw	*Approve*	*Mar 15, 2011*