EICC COURSE DEVELOPMENT MODEL (CDM)

CATALOG COURSE NUMBER: MFG-151
COURSE TITLE: CNC Fundamentals
Originating College: ☐CCC ☐MCC ☑SCC Effective Term/Year: Fall 2014
Initiating Faculty Member: Kenneth Darmody Initiating Department Coordinator: Ben Kettering

Reason for submission: Check all that apply
☐New Course If yes, type of course:
☐**A&S**
To be considered for General Education? ☐ Yes ☐ No Category:
To be part of an A & S Concentration? ☐ Yes ☐ No Concentration:
☐**CTE** Program Title: ☐Required ☑Elective
☑General Education or Program Review ☐Reactivation of an inactive course ☐Making course inactive
☐Changing course; please explain:
☐Other; please explain:

Contact Hours/Distribution of Contact Hours

Lecture Hours		Lab Hours		Clinical Hours		Coop Hours	
Hours per Week:	1.00	Hours per Week:	2.00	Hours per Week:	0	Hours per Week:	0
Number of Weeks:	16.50	Number of Weeks:	16.50	Number of Weeks:	16.50	Number of Weeks:	16.50
***Note: If offering a course for the full fall or spring semester, the number of weeks is 16.5*							
Total Lecture Hrs:	19.80	Total Lab Hrs:	39.60	Total Clinical Hrs:	0	Total Coop Hrs:	0

Semester Hours Credit: 2.00 if variable credit, give range:
Allow repeat* for credit: ☐Yes ☑No
If yes, total course repeats allowed: If yes, total credits:
*Note that repeat for credit means a student can pass the course and then repeat it for additional credit. An internship course is an example of a course that could be set up as repeatable for additional credit

Course or courses this CDM replaces, if any:

CATALOG COURSE DESCRIPTION: This course will introduce students to the Cartesian Coordinate System. Students will concentrate on the use of G codes for tool movements and will make the calculation necessary to identify correct tool locations. A basic knowledge of geometry and trigonometry is necessary to be successful.

RECOMMENDED ENTRY LEVEL SKILLS/KNOWLEDGE:

PRE-REQUISITE COURSES

CCN#	COURSE TITLE
MAT 734	Math for Technologies B
MFG 186	Plant Safety

CO-REQUISITE COURSES

CCN#	COURSE TITLE

PUBLISHED MATERIAL(S) USED FOR CDM DEVELOPMENT: Smith, Robert D., and John C. Peterson. Mathematics for Machine Technology. Clifton Park: Delmar Cengage Learning, 2009. Print.
Amatrol. CNC Operator Program: HAAS Based Interface. Amatrol, 2009. Web.

In general it is expected that source material will be dated within 5 years of this CDM date. If all materials/ textbooks

cited above are older than this, please explain:

GENERAL COURSE GOALS

Upon successful completion of this course the student should be able to:

Understand the grid coordinate system.
Identify coordinate grids on machine centers.
Apply the use of coordinate grids on machine centers.
Identify machining center operations and tooling.
Identify and describe automatic machining controls.

TOPICAL OUTLINE

1. Mathematics for Machine Technology
2. Using CNC Online Training Skills
3. Machine Safety
4. Cartesian Coordinate System
5. Machine Reference Points
6. Part Drawing to Program
7. CNC Pendant Introduction
8. Navigating the Display and Mode Screens

COURSE OBJECTIVES

Upon successful completion of the course, a student should be able to:

1. Mathematics for Machine Technology
   a. Identify points in a two axis Cartesian coordinate system.
   b. Create points in a two axis coordinate system.
   c. Create points in a three axis coordinate system.
   d. Create position (dimension) from engineering drawings using point to point two axis control systems.
      1. Absolute positioning.
      2. Incremental positioning.
2. Using CNC Online Training Skills
   a. Identify online training skill proecdures.
3. Machine Safety
   a. Explain the general safety practices for the Haas CNC machines.
   b. Identify and explain the importance of the emergency stop button.
   c. Recognize and define the warning labels on the Haas CNC machines.
4. Cartesian Coordinate System
   a. Identify the Haas SL Series lathe axes and movements.
   b. Identify the basic Cartesian coordinate system.
   c. Use the Cartesian coordinate system with the SL Series lathe.
5. Machine Reference Points
   a. Define machine home zero.
   b. Identify the location of machine home zero.
   c. Define programmed part zero.
   d. Define work offset.
   e. Define how to find the work offset.
   f. Describe how to determine tool offsets.
6. Part Drawing to Program
   a. Determine axis values of a part program using information given on a part drawing.
7. CNC Pendant Introduction
   a. Explain the purpose of the Haas CNC pendant.
   b. Identify the grouping of buttons on the CNC pendant.
   c. Describe the functions of the buttons on the CNC pendant.
8. Navigating the Display and Mode Screens
   a. Navigate the display screens.
   b. Navigate the mode screens.

RECOMMENDED METHODS OF INSTRUCTION: *Check all appropriate methods of instruction to facilitate student learning of course objectives.*

☐ Case Studies	☐ Class Discussions
☑ Computer lab work	☐ Computer-assisted tools
☐ Computer-assisted writing	☐ Conducting experiments
☑ Demonstration or modeling	☐ Electronic interaction
☐ Field observation	☐ Field trips
☐ Guest speaker	☑ Guided practice
☐ In-class writing or editing workshops	☐ Journals
☑ Lecture	☐ Library instruction and resources
☑ Model building	☐ Peer review
☐ Readings	☐ Role play
☐ Service learning	☐ Simulation
☑ Student and instructor conferences	☐ Student collaborative learning
☐ Student presentation	☑ Student projects
☐ Tests or quizzes	☐ Worksheets/surveys
☐ Writing assignments/exercises (graded or not)	
☑ Other (please list specifics): Online models	

RECOMMENDED EVALUATION METHODS: *Check all appropriate methods of evaluation to assess student achievement of course objectives.*

☐ Class workshops	☐ Classroom discussions/participation
☐ Collaborative work	☑ Demonstration of skill(s)
☑ Individual conferences	☐ Journals
☑ Laboratory reports	☐ Oral presentations
☐ Portfolios	☐ Pretest/Posttest
☐ Quizzes	☐ Reading responses
☑ Student presentations	☑ Student projects
☐ Tests	☐ Writing Assignments
☐ Other (please list specifics):	

ATTENDANCE: Policies on attendance will be formulated by the instructor and communicated to the students on the course syllabus.

ACADEMIC DISHONESTY: Policies on academic dishonesty can be found in the EICC student code of conduct published in the student handbook.

CDM CREATION/REVIEW/REVISION INFORMATION	
Originally Written by:	Date:
Department Chair, Comments, & Date:	
Does similar curriculum exist at other EICC Colleges? ☐ CCC ☐ MCC ☐ SCC ☐ No	
If yes, Counterparts Consulted, College, Comments & Date:	
CDM Review or Revision Date:	
Faculty member(s) & College:	
Does similar curriculum exist at other EICC Colleges? ☐ CCC ☐ MCC ☐ SCC ☐ No	

Changes made to course which will require further review steps:
❑ Making course inactive ❑ Credit hours ❑ Contact hours ❑ Course Description
❑ 25% or more of course objectives ❑ Other minor revisions or no revisions
Dean Review, Comments & Date:
If changes made require further review and approval:
College Curriculum Committee Sign-off & Date:
IC Review Subcommittee Sign-off & Date:
Instructional Council Approval: