ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CNC 1200 Fundamentals of CNC Operations

Date: Spring 2023

Credit Hours: 3

Complete all that apply or mark "None" where appropriate:
Prerequisite(s): None

Enrollment by assessment or other measure? ☐ Yes ☒ No
If yes, please describe:

Corequisite(s): None

Pre- or Corequisite(s): None

Consent of Instructor: ☐ Yes ☒ No

Delivery Method: ☒ **Lecture**   **2 Contact Hours** (1 contact = 1 credit hour)
☐ **Seminar**   **0 Contact Hours** (1 contact = 1 credit hour)
☒ **Lab**   **2 Contact Hours** (2-3 contact = 1 credit hour)
☐ **Clinical**   **0 Contact Hours** (3 contact = 1 credit hour)

Offered: ☒ **Fall**   ☒ **Spring**   ☐ **Summer**

CATALOG DESCRIPTION and IAI NUMBER (if applicable):
In this course, the student will learn the basics of computer numerical control. They will, by the end of the semester, have a knowledge of the types of machines, purpose, and controls. They will also study basic CNC operation and programming.

ACCREDITATION STATEMENTS AND COURSE NOTES:
None

COURSE TOPICS AND CONTENT REQUIREMENTS:
 I. Safety Precautions System Description
 II. Functional Description of Controls
III. Machine Set-up and Operation
 IV. Control Alignment
 V. Manual Data Input
 VI. Automatic Cycle Set-up and Operation
VII. Operator Messages and Trouble Shooting
VIII. Auxiliary Equipment Operation
 IX. Basic Programming

INSTRUCTIONAL METHODS:
1. Lecture
2. Video/Demonstration
3. Practical Applications
4. Individualized Instruction
5. Guest Speakers
6. Hands-on lab work

EVALUATION OF STUDENT ACHIEVEMENT:
1. Problem solving
2. Skill proficiency
3. Technical knowledge

INSTRUCTIONAL MATERIALS:
Textbooks
McGraw-Hill Machining and CNC Technology

Resources
Haas CNC reference guide
Haas mill programing workbook
Power point slides

LEARNING OUTCOMES AND GOALS:
Institutional Learning Outcomes
☒ 1) Communication – to communicate effectively;
☒ 2) Inquiry – to apply critical, logical, creative, aesthetic, or quantitative analytical reasoning to formulate a judgement or conclusion;
☐ 3) Social Consciousness – to understand what it means to be a socially conscious person, locally and globally;
☒ 4) Responsibility – to recognize how personal choices affect self and society.

Course Outcomes and Competencies
1. After study and discussion, the student will be able to operate control panel. will also be familiar with machine specifications.

2. After demonstration and lecture, the student will be able to discuss and describe the functional aspects of the machine controls.
3. Following lecture and lab demonstration, the student will be able to set up and operate machines.
4. After lecture and demonstration, the student will be able to align control and set-up, including tool data, offsets, taper trims, and overrides.
5. Upon completion of discussion and lecture, the student will be able to align machine, zero shift, establish program point.
6. Following lecture and demonstration, the student will be able to set-up machine in automatic cycle, including searching programs, unloading programs into memory, edit programs, and in setting blocks of information.
7. After demonstration and lecture, the student will be able to utilize the Manual Data input Controls.
8. Upon completion of lecture and demonstration, the student will be able to write and run basic programs on CNC Vertical Mill.