Minnesota State College Southeast

BIKE 1030: CAD CAM

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will familiarize the student with the relationship between computer aided drafting and computer aided machining. Students will learn the principles of CNC machining. Students will learn to transfer CAD data to the machining programs (CAM) and to machine tools using the CAM package. Positive design aesthetics will also be explored and compared to traditional utilitarian design methods. (Prerequisite: none) (3 credits: 2 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 02/27/2018 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. File management in a CAD/CAM system
2. Principles of CAM software operation
3. Application of Computer Aided Machining (CAM)
4. Communication systems between CAD/CAM and Machine Tool
5. Design aesthetics vs utilitarian design considerations
6. CNC machine operation and part generation

D. LEARNING OUTCOMES (General)

1. Apply all safety standards to machining applications
2. Select appropriate tooling for a machining application
3. Calculate tool speeds & feeds for a specific machining application
4. Use the CAM software to generate mill and lathe tool path files
5. Select proper cutter compensation for a machining application
6. Generate the graphic verification of tool path files
7. Select a proper post processor for machining
8. Use the CAM software programming system to write an NC file
9. Download an NC file to a machine tool
10. Set offsets on a machine tool
11. Verify the created tool path on a machine tool
12. Operate a CNC mill or lathe to make parts to print dimensions
13. Complete all assigned drawings, machining jobs and other tasks
14. Demonstrate positive design aesthetics as they pertain to bicycle design and methods to increase visual appearance during the CAM process

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted