SLCC

Engineering Department

EDDT1600: CNC Programming and CNC Machining Theory

COURSE DESCRIPTION: Basic CNC machine shop theory including G and M programming, operation, and performance of CNC lathes and mills. Lab Experience is included. Pre-Req: EDDT 1500

COURSE LEARNING OUTCOMES:

- Students will demonstrate general safety precautions relating to machine shop procedures.
- Students will explain how CNC machines are used in Industry including Types of Machine Tools, Input and Storage Media, Types of System Controls, Cutting Tools, and Holding Fixtures.
- Students will demonstrate procedures required to setting up and running "3 axis CNC mills" and "2 axis CNC lathes".
- Students will demonstrate use of manual CNC Programming, including Linear and Circular Interpolation, Tool and Machine Offsets, and Subroutines.
- Students will describe the scope as well as the limits of parts designed to be fabricated using CNC machining.
- Students will demonstrate use of Computer Aided Manufacturing (CAM) using Feature CAM software.

SUPPLIES:

1) Safety glasses (Z87)

2) USB Thumb drive

GRADING: Student's grades shall be determined by their performance on three tests, performance and completion of assigned lab projects, and a final comprehensive test. Attitude and participation will also be factored into the final grade. Scores will be weighted, added, averaged and rounded to the nearest full percentage point with the final course grade as follows:

Letter Grade	Score
A	93-100
A-	90-92
B+	87-89
B	83-86

B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
E	0-59

Course Contents:

Welcome

- Course Overview
- Student Introduction

Module 1: Word Address Programming

- Module 1 Overview
- "ZIG ZAG FACE OFF" Programming Assignment
- Module 1 HAAS Operator Online Training and Quiz
- Module 1 Quiz

Module 2: Spot Drill and Hole Drill Operations

- Module 2 Overview
- Hole Drilling Programming Assignment
- Module 2 HAAS Operator Online Training and Quiz
- Module 2 Quiz

Module 3: Counter Bore, Ream, Tap Canned Cycles

- Module 3 Overview
- Counter Bore, Ream, Tap Programming Assignment
- Module 3 HAAS Operator Training and Quiz
- Module 3 Quiz

Module 4: Linear External Profiles

- Module 4 Overview
- Linear External Profiles Assignment
- Module 4 HAAS Operator Training and Quiz
- Module 4 Quiz

Module 5

- Module 5 Overview
- Module 5 Linear Pockets Assignment
- Module 5 HAAS Operator Training and Quiz
- Module 5 Quiz

Module 6

- Module 6 Overview
- Module 6 Circular Interpolation Assignment
- Module 6 HAAS Operator Training and Quiz
- Module 6 Quiz

Module 7

- Module 7 Overview
- Module 7 Cutter Diagram Compensation Assignment
- Module 7 HAAS Operator Training and Quiz
- Module 7 Quiz

Module 8: Introduction to CAM Software

- Module 8 Overview
- Writing the Face-Off Program Using CAM Software
- Module 8 Haas Operator training and Quiz
- Module 8 Quiz

Module 9: Hole Operations, CAM

- Module 9 Overview
- Writing a Program with Multiple Hole Operations
- Module 9 Haas Operator training and Quiz
- Module 9 Quiz

Module 10: Hole Operations, CAM

- Module 10 Overview
- Writing Programs with Slots and Grooves
- Module 10 Haas Operator Training and Quiz
- Module 10 Quiz

Module 11: Chamfers, Rounds, and Sides, CAM

- Module 11 Overview
- Writing Programs with Sides, Rounds, and Chamfers Assignment
- Module 11 Haas Operator Training and Quiz
- Module 11 Quiz

Module 12: Surfaces

- Module 12 Overview
- Writing Programs with Surface Milling Assignment
- Module 12 Haas Operator Training and Quiz

- Module 12 Quiz

Module 13: Complex Object, Drawn

- Module 13 Overview
- Writing the Program for Object 13
- Module 13 Haas Operator Training and Quiz
- Module 13 Quiz

Module 14: Complex Object, Imported

- Module 14 Overview
- Writing the Program for Object 14 Assignment
- Module 14 Haas Operator Training and Quiz
- Module 14 Quiz