COURSE OUTLINE

COMPUTER AIDED MANUFACTURING 220
Basic Lathe

I.   **Catalog Statement**

Computer Aided Manufacturing 220 introduces the operation of computers in programming
numerical control lathe machines.

Total Lecture Units: 3.0
Total Course Units: 3.0

Total Lecture Hours: 48.0
Total Faculty Contact Hours: 48.0

II.   **Course Entry Expectations**

Skills Level Ranges: Reading 5; Writing 5; Listening /Speaking 5; Math 5.

III.   **Course Exit Standards**

Upon successful completion of required coursework the student will be able to:
1.   compile a reference guide to be used in future training as well as later in the field;
2.   demonstrate organizational skills by completing this reference guide and submitting it for a
     grade at the end of the course;
3.   perform basic drawing of geometric shapes and translate them into the proper numerical format
     required by the equipment;
4.   demonstrate a basic knowledge of the principles required to successfully complete a simple
     project.

IV.   **Course Content**   **Total Faculty Contact Hours: 48**

A.   General Introduction   3 hours
     1.   Scope of curriculum
     2.   Course requirements
     3.   Grading standards
     4.   Methods of preparation

B.   Familiarization   6 hours
     1.   Overview of textbook requirements
     2.   Overview of workbook requirements

    3. Introduction to program
    4. Introduction to computer
    5. Demonstration of computer operation
    6. Demonstration of MasterCam program

C. Overview of Files   6 hours
    1. GE3 file, drawing
    2. NCI file, definition
    3. NC file, alpha numeric listing
    4. File management

D. GE3 Explanation   8 hours
    1. Main menu format
    2. Keystroke commands
    3. Methods of drawing display
    4. 2D drawing
    5. Drawing levels
    6. Storage and retrieval of files

E. NCI Explanation   8 hours
    1. Explanation of tool path development
    2. Proper sequencing of cutting path
    3. Tool library
    4. Parameter set-up
    5. Backplotting and plotting
    6. Modification of NCI file

F. NC Explanation   8 hours
    1. Definition of NC program make-up
    2. Format of the NC program layout
    3. Methods of editing of the NC program
    4. Modification of the NC

G. Downloading/Uploading to Controller   6 hours
    1. Setup of machine control
    2. Setup of transferring computer
    3. Proofing of program

H. Program Changes at Control: 3 hours
    1. Allowable machine control changes

V. <u>Methods of Instruction</u>

The following methods of instruction may be used in the course:
1. classroom lecture and discussion;
2. demonstrations;
3. films;
4. peer learning;
5. guest speakers.

VI. <u>Out of Class Assignments</u>

The following out of class assignments may be used in the course:
1. group research project;
2. written assignments.

VII. <u>Methods of Evaluation</u>

The following methods of evaluation may be used in the course:
1. midterm examinations;
2. presentations;
3. final examination.

VIII. <u>Textbooks</u>

MasterCam Applications Manual. Verson 4.11, CNC   Concepts, 1993
  10th Grade Reading Level   ISBN:

MasterCam Milling Handbook. Version 4.11, CNC Concepts, 1993
  10th Grade Reading Level   ISBN:

IX. <u>Student Learning Outcomes:</u>

1. Student will demonstrate keystroke commands for each program.
2. Student will understand the proper applications, methods, and procedures for each program.
3. Student will organize data coherently using different types of files.
4. Student will understand and demonstrate the design process from drawing to execution of a project.