**CNC Machinist Course Descriptions:**

**Course Name: Basic Computer Operation**  
Course Code: BCS 102  
Course Description: This course introduces the student to the basic concepts and principles of personal computers including components, operating software, files management, and hands on exposure of Microsoft Word and Excel.  
*Prerequisites: None*

**Course Name: Basic Print Reading**  
Course Code: BPR 100  
Course Description: This course is geared towards the first-time blueprint reader. Emphasis will be on the fundamentals and the ability to form a mental picture of different views. Students will be asked to draw orthographic drawings, missing views and isometric views to enhance their understanding of prints.  
*Prerequisites: None*

**Course Name: Technical Math I**  
Course Code: MAT 100  
Course Description: This course is designed to introduce students to the mathematics utilized daily on the manufacturing/tool and die shop floor. Students will utilize blueprints, machining processes and measurement data to calculate answers in Basic Math, shop Algebra, and basic plane Geometry.  
*Prerequisites: None*

**Course Name: Inspection Principles**  
Course Code: QCT 105  
Course Description: This course is to introduce individuals to the fundamental principles of using precision measurement tools and gages. Students will learn the operation and selection of the correct measuring instrument for the part feature to be measured and be able to perform care and maintenance of the tools and gages.  
*Prerequisites: None*

**Course Name: Machining Fundamentals**  
Course Code: MAN 105  
Course Description: This course is designed to introduce the beginning machinist to the fundamental principles of hand tools, drill sharpening, and basic cutting theory. Students will be exposed to the setup and operation of manual lathes and mills and common operation processes including drilling operations, squaring operations, milling of slots and steps, and turning OD and ID.  
*Prerequisites: Basic Print Reading, Technical Math I, Inspection Principles*

**Course Name: CNC Setup and Operation**  
Course Code: CNC 102  
Course Description: This course will enable the beginning CNC student to apply fundamental principles and applications of setup and operation to a CNC Lathe and CNC Mill. The course will cover the reading and editing of CNC programs, setup, and maintenance of tool holders, tooling & work holding and adjustments of work & tool offsets. Finally, students will be able to perform common inspection processes and be able to produce a production run of parts to the given print tolerance.  
*Prerequisites: Machining Fundamentals*
**Course Name: G&M CNC Programming**  
Course Code: CNC 215  
Course Description: This course will teach the student to write G & M code CNC programs for CNC Lathes and CNC Mills. The course will cover the most common G&M codes for Fanuc/Haas type machines, including linear & circulator interpolation, drilling, hole making, roughing & finishing and threading canned cycles. The student will be able to write and troubleshoot programs for a CNC Mill and CNC Lathe using a program editing software and on a CNC Control.  
*Prerequisites: CNC Setup & Operation, Tech Math II*

**Course Name: Manual Milling**  
Course Code: MAN 110  
Course Description: This course will enable the beginning machinist to setup and operate a manual vertical milling machine. Students will be able to tram the tool head, square raw material, mill steps & slots, and perform drilling operations to print tolerances.  
*Prerequisites: Machining Fundamentals*

**Course Name: Manual Lathe**  
Course Code: MAN 120  
Course Description: This course will enable the beginning machinist to setup and operate a manual lathe. Students will be able to setup 3 & 4 jaw chucks, turn OD & ID diameters, face, groove, part off, drill and thread to print tolerances.  
*Prerequisites: Machining Fundamentals*

**Course Name: Technical Math II**  
Course Code: MAT 150  
Course Description: This course will enable students to identify geometric shapes that are applied to part geometry and determine unknown angles, lengths, and points using plane Geometry and right angle Trigonometry. Students will learn to calculate using Trigonometry functions, Pythagorean’s theorem, and the Law of Sines and Cosines.  
*Prerequisites: Basic Print Reading, Technical Math I*

**Course Name: Computer Aided Design Principles**  
Course Code: CAD 115  
Course Description: This course will enable the beginning student to learn the fundamental Solids drawing principles of a computer aided design software. Students will be able to draw basic 3D parts, import geometry, make simple alterations to the imported geometry, save drawings, and export files.  
*Prerequisites: Basic Print Reading, Basic Computer Operations*

**Course Name: Basics of CMM**  
Course Code: QCT 240  
Course Description: This course will enable the beginning machining student to operate a Coordinate Measuring Machine and apply basic GD&T principles to measuring and inspecting basic 3 dimensional parts. Students will focus on identifying basic geometrical shapes of parts and measuring them with a CMM.  
*Prerequisites: Basic Print Reading, Tech Math I, Inspection Principles*

**Course Name: Computer Aided Manufacturing 2.5D Mill**  
Course Code: CAM 120  
Course Description: This course will enable the beginning CNC Machinist to operate a CAM software to draw and import part geometry and create a 2.5D CNC mill program to manufacture a part to print tolerances. Student will select tools, tool holders, calculate speeds & feeds, create a setup sheet, create CNC programs, and edit the programs using editing software.  
*Prerequisites: Basic Computer Operations, CNC Setup & Operation, Computer Aided Design Principles*
Course Name: Computer Aided Manufacturing 2D Lathe
Course Code: CAM 130
Course Description: This course will enable the beginning CNC Machinist to operate a CAM software to draw and import part geometry and create a 2D CNC lathe program to manufacture a part to print tolerances. Student will select tools, tool holders, calculate speeds & feeds, create a setup sheet, create CNC programs, and edit the programs using editing software.
Prerequisites: Basic Computer Operations, CNC Setup & Operation, Computer Aided Design Principles

Course Name: Workholding Devices & Applications
Course Code: TDM 125
Course Description: This course will enable the beginning CNC Machinist to select and maintain mill and lathe workholding devices and fixtures. Students will learn key principles of lathe chucks, mill vises and fixtures, and how to apply them to specific part shapes, materials, machining operations and multiple quantities.
Prerequisites: None

Course Name: Advanced CNC Programming Techniques
Course Code: CNC 225
Course Description: This course will enable the beginning CNC Machinist to be exposed to and create basic macro programs, sub programs, sub-routine programs and 3 + 2 axis programming. The course will also expose the student to creating and operating basic part probing programs using a CNC control and finally the programming of the Y-axis of a CNC lathe.
Prerequisites: CNC Setup & Operation, G&M CNC Programming, CAM 2D Lathe, CAM 2.5 D Mill

Course Name: Applied Computer Aided Manufacturing
Course Code: CAM 200
Course Description: This course will enable the beginning CNC Machinist to apply CAM and G&M CNC Programming with the CNC Setups and Operations course to the CNC Lathe and CNC Mill. The course will provide hands on applications of machining a series of parts that will include drawing and importing CAD geometry, creating a setup sheet, programming, setup, operation, manufacturing and inspection of a series of parts on both a CNC Mill and a CNC Lathe.
Prerequisites: CNC Setup & Operation, G&M CNC Programming, Computer Aided Manufacturing 2.5D Mill, Computer Aided Manufacturing 2D Lathe