**Linn-Benton Community College**

**Machine Tool Technology Department**

**Course Syllabus**

Course Name: CNC Mill

Course Number: MA3.420 01/02

Hours, Days: 1:00-3:50 PM (01) or 6:00-8:50 PM (02) Wednesday and Thursday

Credits: 4

Required Text: *Haas Programming Workbook,* available in the LBCC Bookstore

Required Calculator: Sharp EL506X, available in the LBCC bookstore

Location: IB 112

Instructor: Chris Berry

Office hours: Wednesday 4:00-5:00pm, Thursday 5:00-6:00pm IB 111C

Phone number: Office 541-917-4509 / Cell 503-931-7728 (Text Only)

Email address: berryc@linnbenton.edu

Course Description: This course provides training in the operation of the modern Vertical Machining Center (VMC). Students learn safe Computer Numeric Control (CNC) machining methods with an emphasis on machine operator skills. A balance of lectures and hands-on learning experiences are designed to help students achieve the skills required to start a career as a qualified CNC machine operator. Student’s progress will be evaluated using a series of competency tests in the classroom as well as at the machine. Students will practice their ability to read, write and edit industry standard G&M code. The primary focus of this course is the development of skills for successful employment.

Methods of Instruction: A combination of lectures, reading assignments, demonstrations and laboratory assignments will be utilized.

Course Objectives: Students successfully completing this course will be able to:

• Demonstrate good CNC machine operator skills.

• Call up an existing part program, check offsets and perform a dry run.

• Adjust part programs as required by machining considerations.

• Follow set up sheet instructions.

• Read, write and edit basic G&M machine code.

• Understand and follow safety procedures for CNC machine tools.

• Apply right angle trigonometry for tool path programming

• Plan a logical order of operations and tool changes.

• Balance cutting speed, feed rate and depth of cut for efficient machining.

Methods of Evaluation: Student’s progress will be assessed with a series of skills tests and laboratory assignments. Midterm and Final examinations will be given. Students are required to keep an organized notebook; the notebook factors into the final grade.

Skills tests = 15%

Lab assignments =35%

Midterm exam = 10%

Final Exam = 25%

Notebook = 15%

Course Content: The following topics will be covered in this course. (Subject to change at instructor's discretion)

• Start up and initialization procedures

• Manual operation

• Manual Data Input

• Setting work coordinates

• Setting tool length offsets and tool radius offsets

• Reading, writing and editing G&M machine code

• Safety in regard to proving part programs

• Safety in regard to machine defaults

• Right angle trigonometry as it applies to tool path

• Polar to rectangular coordinate conversion

• Tangent point calculation

• Automatic cutter compensation

• Canned cycles, including drilling, tapping, circular pocket milling, bolt hole patterns.

• Subprograms and looping subprograms

• Machine operator skills

Request for Special Needs or Accommodations

Direct questions about or requests for special needs or accommodations to the LBCC Disability Coordinator, RCH-105, 6500 Pacific Blvd. SW, Albany, Oregon 97321, Phone 541-917-4789 or via Oregon Telecommunications Relay TTD at 1-800-735-2900 or 1-800-735-1232. Make sign language interpreting or real-time transcribing requests 2-4 weeks in advance. Make all other requests at least 72 hours prior to the event. LBCC will make every effort to honor requests. LBCC is an equal opportunity educator and employer.

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Students who may need accommodations due to documented disabilities, who have medical information which the instructor should know, or who need special arrangements in an emergency should speak with their instructor during the first week of class. If you believe you may need accommodations but are not yet registered with the Center for Accessibility Resources (CFAR), please visit the [CFAR Website](https://linnbenton.edu/cfar) for steps on how to apply for services or call 541-917-4789.