

SYLLABUS

DIVISION: Business & Engineering Technologies

REVISED 2012

CURRICULA IN WHICH COURSE IS TAUGHT: Precision Machining Technology

COURSE NUMBER AND TITLE: MAC 121 - Numerical Control I

CREDIT HOURS: 2 HOURS/WK. LEC: 1 HOURS/WK. LAB: 2 LEC/LAB COMB: 3
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I. CATALOG DESCRIPTION:

MAC 121 is an introduction to CNC lathes that focuses on numerical control techniques in metal forming and machine processes. It includes theory and practice in lathe machine computer numerical control program writing, setup and operation.

II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES IN WHICH IT IS TAUGHT:

This course teaches the student basic principles of programming and safe use of CNC lathes.

III. REQUIRED BACKGROUND:

MAC 101 or equivalent

IV. COURSE CONTENT:

The following items will be covered in this course, though not necessarily in this order:

1. Cartesian coordinates
2. Polar coordinates
3. Location of points using polar & Cartesian coordinates
4. Electronic control of machine tools
5. Machine tool axes
6. Manual programming of lathes
 - a. "G" and "M" codes
 - b. Setting & editing tool offsets
 - c. Speeds & feeds
 - d. Programming tool changes
 - e. Data input into computer

V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE :

- Communications Information Literacy
 Culture and Social Understanding
 Critical Thinking Scientific reasoning
 Quantitative Reasoning Personal Development

VI. LEARNER OUTCOMES

VII. EVALUATION METHOD

Understand and utilize the polar and Cartesian coordinate systems.	Lab exercises and class assignments
Understand and utilize “G” and “M” codes to manually write programs for work-pieces such as: <ul style="list-style-type: none"> • Straight turning • Rough and finish turning of tapers and/or curves. • Facing • Threading • Multiple cuts (do-loops) • Multiple operations (sub-routines) 	Lab exercises and class assignments
Understand and perform work-piece setups.	Lab exercises and class assignments
Understand and perform tool offsets and setups.	Lab exercises and class assignments
Understand and program tool changes	Lab exercises and class assignments

VIII. Over 90% of students will successfully complete this class.