SYLLABUS

DIVISION: Business and Engineering Technology **REVISED:** Spring 2014

CURRICULA IN WHICH COURSE IS TAUGHT: Precision Machining Technology

COURSE NUMBER AND TITLE: MAC 223 – Advanced Machine Tool Operations III

CREDIT HOURS: 7 **HOURS/WK LEC:** 4 **HOURS/WK LAB:** 9 **LEC/LAB COMB:** 13

I. CATALOG DESCRIPTION:

- Focuses on advanced lathe and millwork with concentration on fits, finishes, inspection, quality control, and basic heat-treating.
- Includes design and construction of specific projects to determine the student's operational knowledge of all equipment.

II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:

- To further develop the students' skills and understanding of precision machining with emphasis on developing speed and accuracy of projects.

III. REQUIRED BACKGROUND/PREREQUISITES:

- MAC 222

IV. COURSE CONTENT:

A. Continuation of Advanced Milling and Lathe Procedures

B. Grinding and Abrasive Machining Processes
1. Selection & Identification of Grinding Wheels
2. Truing, Dressing, and Balancing Grinding Wheels
3. Grinding Fluids
4. Surface Grinders
5. Work Holding on Surface Grinders
6. Using the Surface Grinder
7. Problems & Solutions in Surface Grinding
8. Cylindrical Grinders
9. Universal Tool and Cutter Grinder

C. Advanced Processes
1. Job Planning
2. Jigs and Fixtures
3. EDM
4. Laser
5. Water Jet

V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE (Place X by all that apply)

__X__ Communications

__X__ Critical Thinking

__X__ Cultural & Social Understanding

__X__ Information Literacy

__X__ Personal Development

__X__ Quantitative Reasoning

_____ Scientific Reasoning

VI. LEARNER OUTCOMES

VII. EVALUATION

Learner outcome • Demonstrate ability to machine complex parts with proper allowances for grinding.	**Evaluation method** Lab exercises In class assignments
Learner outcome • Demonstrate ability to machine precise tapers and complex geometries on a lathe.	**Evaluation method** Lab exercises In class assignments
Learner outcome • Demonstrate the ability to select the proper grinding wheel and mount, true, and dress surface grinder wheels.	**Evaluation method** Lab exercises In class assignments Written tests
Learner outcome • Demonstrate the ability to set-up and operate a surface grinder to grind parts to print specifications.	**Evaluation method** Lab exercises In class assignments Written tests
Learner outcome • Demonstrate ability to safely setup and operate the universal tool and cutter grinder to sharpen endmills, reamers, and drills.	**Evaluation method** Lab exercises In class assignments Written tests
Learner outcome • Demonstrate the ability to identify various components of advanced machining equipment, jigs, and fixtures. • Demonstrate proper job planning abilities.	**Evaluation method** Lab exercises In class assignments Written tests

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