



### **III. Statement of Course Need**

- A. This course meets a program requirement for the Mechanical Engineering Technology A.S. degree.
- B. This course has a laboratory component. The lab will provide students with hands-on experience in basic manufacturing techniques and give students a better understanding of the core manufacturing processes in the field.
- C. This course generally transfers as a program requirement or a free elective.

### **IV. Place of Course in College Curriculum**

- A. Free Elective
- B. This course meets a program requirement for the Mechanical Engineering Technology A.A.S. degree.
- C. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, [www.njtransfer.org](http://www.njtransfer.org); b) for all other colleges and universities, go to the individual websites.

### **V. Outline of Course Content**

- A. Shop safety and basic hand tools
- B. Job assignments
  - 1. Introduction to Manufacturing Processes
  - 2. Reading a drawing
- C. Work-holding and hand tools
- D. Measuring Tools
  - 1. Micrometer
  - 2. Vernier Caliper
- E. Identification and uses of taps
- F. Inspection tools
  - 1. Layout tools
  - 2. Tolerance
  - 3. Gage blocks
- G. Drill Presses
  - 1. Types-tooling
  - 2. Work and tool holders
  - 3. Speeds, feeds, horsepower, cutting time, scrap cost calculations
- H. Lathes
  - 1. Types of tooling and operations
  - 2. Work and tool holders
  - 3. Speeds and Tapers
  - 4. Threads.
- I. Milling machines
  - 1. Tooling
  - 2. Operations

- 3. Work and tool holders
- J. Milling machines
  - 1. Indexing
  - 2. Rotary tables
  - 3. Speeds, feeds, cutting time and horsepower
- K. Grinders
  - 1. Wheel selection and use of grinders.
- L. Production machines
  - 1. CNC
  - 2. Power presses
  - 3. Turret lathes
- N. Inspection of completed projects.

## **VI. General Education and Course Learning Outcomes**

### **A. General Education Learning Outcomes:**

At the completion of the course, students will be able to:

1. Analyze text, interpret problem data, and prepare laboratory reports. (GE-NJ 2, GE-NJ 3)\*
2. Compose hypotheses, apply problem solving strategies, and perform relevant calculations of speeds, feeds, horsepower, cutting time, and approach distance. (GE-NJ 2, GE-NJ 3)\*
3. Select appropriate equipment and materials for manufacturing applications. (GE-NJ 2)
4. Identify and solve technical problems related to manufacturing processes. (GE-NJ 3, GE-NJ 4)\*
5. Communicate effectively using appropriate engineering terminology, standards and engineering codes. (GE-NJ 1)

\* Embedded critical thinking

### **B. Course Learning Outcomes:**

At the completion of the course, students will be able to:

1. Demonstrate knowledge of machining processes and operational sequence
2. Safely demonstrate the use and understanding of various hand tools
3. Distinguish between various types of drill presses, lathes, and milling machines and their applications
4. Demonstrate knowledge of special Production Machines and CNC equipment

5. Finish a manufacturing project with quality and in time

### **C. Assessment Instruments**

1. quizzes
2. exams
3. homework
4. lab reports
5. projects

### **VII. Grade Determinants**

- A. quizzes
- B. chapter exams
- C. homework
- D. lab reports
- E. projects
- F. final cumulative exam

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

- A. lecture/discussion
- B. small-group work
- C. laboratory
- D. student collaboration
- E. independent study

### **VIII. Texts and Materials**

- A. Suggested textbook: Machine Tool Practices 9th edition, Richard R. Kibbe, Prentice Hall, ISBN: 0135015081

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

### **IX. Resources**

- A. Advanced Manufacturing laboratory in the Workforce Training Center

**X. Honors Options [if relevant]**

This course does not have an Honors Option.