

COURSE OUTLINE

ENGINEERING 102
(Formerly Drafting 129)

I. Catalog Statement

Engineering 102 – Engineering Print Reading For Industry- 2 units

Recommended preparation: Eligibility for English 120 or ESL 165

Note: A recommended course for basic engineering review.

Engineering 102 is a study of the fundamentals of orthographic drawing to develop the student's ability to understand and utilize the information presented on a blueprint. Such areas as size dimensional systems, tolerancing, S1 metrics, value engineering and related industrial terminology are presented to strengthen the student's ability to interpret an engineering drawing.

Lecture 2 hours, laboratory 1 hour

II. Objectives

Given lectures, demonstrations, films, simulations, written and other assignments, students will demonstrate their knowledge by:

1. Demonstrating a knowledge of the various military and civilian drafting standards through a series of tests
2. Demonstrating a knowledge of basic drafting through a series of drawings
3. Designing and detaining a basic mechanical package by providing a series of working drawings

III. Text

Basic Blueprint Reading and Sketching, Olivo and Payne

Advanced Blueprint Reading for Machine Trades, Delmar Publishers, Albany, N.Y.

Blueprint Reading for Industry, Walter C. Brown, Goodheart-Willcox, 1972

Machine Trades Blue Print Reading, R. Ihne and W. Streeter, American Society, 1972

IV. Course Outline

A. Introduction

1. Class organization
2. Scope and value of drafting to the technician
3. Drawing reproduction processes

B. Drafting equipment

1. Use and care of drafting instruments
2. Use and care of drafting machines
3. Use of specialized drafting equipment
 - a. Templates
 - b. Irregular curves

C. Drawing symbols

1. Their importance to the making of a drawing and the reading of blueprints
2. A study of drawing symbols including
 - a. Object lines
 - b. Center lines
 - c. Cutting plane lines
 - d. Hidden outlines
 - e. Break lines
 - f. Reference lines
 - g. Dimension lines
 - h. Dimensions and surface finish symbols
 - i. Title blocks
 - j. Electrical and electronic symbols
 - k. Welding symbols
 - l. Architectural symbols
 - m. Trade terms and abbreviations

D. Geometric construction and one view drawings

1. Parallel and perpendicular lines
2. Tangents involving straight lines, circles, arcs
3. The ellipse
4. A study in recognition and identification of geometric shapes as they appear on drawings and blueprints

E. A study of the various techniques used by draftsmen and engineers in the creating of a drawing of a three dimensional object

1. Orthographic projection
 - a. Definition
 - b. The projection of the views
 - c. The reference planes
 - d. Selection of views for drawing
 - e. The meaning of lines and surfaces
 - f. The three space dimensions

- g. Cutting planes and sectional views
 - h. Auxiliary views
2. Pictorial drawings
 - a. Isometric
 - b. Oblique
 3. Size description
 - a. Size dimensions
 - b. Location dimensions
 - c. Specific notes
 - d. General notes
 - e. Material specifications

V. Examination/Evaluation Procedures

Six one-hour quizzes and a Final Examination. Quizzes will be in the nature of a performance test - making or modifying a drawing, or reading a drawing.

VI. Special Features

Students will be encouraged to develop sketches or mechanical drawings of items in their special fields of endeavor.