

COURSE OUTLINE

Engineering 101

I. Catalog Statement

Engineering 101 – Engineering Drafting & Basic Design - 3 units

Prerequisite: Eligibility for English 120 or ESL 165.

Engineering 101 is an in-depth study course designed to present training in the manipulation of instruments, lettering, orthographic projection, sketching, drawing auxiliary and pictorial views, sectioning and dimensioning.

Lecture 2 hours, laboratory 4 hours

II. Objectives

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

1. completing a series of basic drafting assignments utilizing lecture and text information,
2. demonstrating their knowledge of basic drafting and dimensioning through a series of drawing assignments,
3. gaining a basic knowledge of industrial drafting practices through tests and lecture information.

III. Text

Technical Drawing, F.E. Giesecke, Alva Mitchell, and I. L. Hill, 6th edition,
The MacMillan Company, New York Engineering Graphics, Giesecke, Mitchell,
Spencer, MacMillan, 1975

IV. Course Outline

- | | |
|---|--------|
| A. General introduction to graphic representation of physical objects | 4 hrs. |
| B. Instruments and their use | 4 hrs. |
| 1. Alphabet of lines | |
| 2. Reading scales | |
| C. Geometric construction | 4 hrs. |
| 1. Geometry of straight line | |
| 2. Geometry of curves | |

D.	Lettering	4 hrs.
	1. Upper case letters - vertical and inclined	
	2. Integers and fractions - vertical and inclined	
	3. Lower case letters - vertical and inclined	
E.	The theory of orthographic drawing	12 hrs.
	1. The glass box	
	2. The six principal views and their relationship	
	3. The classification of surfaces and lines	
F.	The process of orthographic drawing	12 hrs.
	1. Selection of views	
	2. Projection of views	
	3. Orthographic freehand sketching	
	4. Reading orthographic projection	
	5. Projection of normal surfaces	
	6. Projection of inclined surfaces	
	7. Projection of skewed surfaces	
	8. Projection of curved surfaces	
G.	Pictorial drawing and sketching	10 hrs.
	1. Isometric drawing	
	2. Oblique drawing	
H.	Dimensioning	8 hrs.
	1. Lines and symbols	
	2. Selection of distances	
	3. Placement of dimensions	
	4. Dimensioning standard features	
I.	Sectioning	7 hrs.
	1. Types of sections	
	2. Drawing practices in sectioning	
	3. Parts not sectioned	
J.	Auxiliaries	7 hrs.
	1. Basic concepts	
	2. Elevation auxiliaries	
	3. Right and left auxiliaries	
	3. Front and rear auxiliaries	

V. Examination/Evaluation Procedures

Each week drafting plates and a lettering plate are required. These may be done on vellum or on workbook sheets that parallel the text. Each plate is graded on solution, arrangement, line work, lettering, dimensioning (where needed), neatness and accuracy. Six regularly scheduled one-hour tests and one two-and-one-half hour final. All tests are in two parts: the first part is written and covers the textbook material; the second part requires an orthographic solution.

VI. Special Features

None