



ENGINEERING-ARCHITECTURAL GRAPHICS-PART I- ORTHOGRAPHIC PROJECTION

PROF. AVLOKITA AGRAWAL

Department of Architecture and Planning
IIT Roorkee

TYPE OF COURSE : Rerun | Core | UG

COURSE DURATION : 8 Weeks (21 Feb' 22 - 15 Apr' 22)

EXAM DATE : 24 Apr 2022

INTENDED AUDIENCE : Bachelor of Engineering in any discipline, Bachelor of Architecture

COURSE OUTLINE :

All phases of manufacturing or construction require the conversion of new ideas and design concepts into the basic line language of graphics. Therefore, there are many areas (civil, mechanical, electrical, architectural and industrial) in which the skills of drafting play major roles in the design and development of new products or construction. Engineering Graphics is the language of architects and engineers. Just like any other language, we need to learn the vocabulary and grammar in order to be able to communicate. Engineering graphics course is the course which imparts vocabulary and grammar for the language of architects and engineers. Engineering graphics has two distinct components- 2D and 3D. In this course we will cover the topics related to 2D in graphics.

ABOUT INSTRUCTOR :

Prof. Avlokita Agrawal is an architect by qualification. She has been a gold medallist during her undergrad degree. She studied Engineering Drawing during her senior Secondary school and continued it through her degree course. She has taught the course at IIT Roorkee and at MITS Gwalior for several semesters. She has developed a teaching aid to teach the concepts of orthographic projection through funding from Continuing Education Centre at IIT Roorkee. She continues to develop her teaching methodology for engineering graphics.

COURSE PLAN :

Week 1: Introduction to engineering graphics, Principles of Engineering Graphics and their significance, usage of Drawing instruments, stationary materials required-scales, protractor, French curves, papers, pencils, erasers, drawing pins, drafting machine, T-Pulley

Week 2: Dimensioning, Scales-Plain, Diagonal and Vernier Scales; Basic Geometrical construction-perpendicular lines, parallel lines, bisecting an angle etc. Curves used in engineering practice

Week 3: Introduction to orthographic projection, principles of projection, Methods of Projection, Planes of projection, four quadrants, First angle projection, third angle projection, reference line

Week 4: Projection of lines parallel to both the reference planes, Projection of line parallel to one and perpendicular to another plane, Projection of lines inclined to one plane

Week 5: Projection of planes perpendicular to both the reference planes, Projection of planes parallel to both the reference planes, Projection of planes parallel to one and perpendicular to another plane

Week 6: Types of solids, Projection of solids in simple positions, Projection of solids with axis inclined to one of the reference planes and parallel to another, Projection of solids with axis inclined to both the planes

Week 7: Introduction to section of solids, section planes, true shape of sections, Sections of Prisms, Sections of Pyramids, Sections of Cylinders, Sections of Cones

Week 8: Sections of Spheres, Development of surfaces- cubes, prisms, pyramids, Development of surfaces- cylinders, spheres, Intersection of surfaces-two Prisms, two cones, two cylinders