SUBJECT NO-AR13307, SUBJECT NAME- DESCRIPTIVE GEOMETRY 1

LTP- 1-0-3,CRD- 3

SYLLABUS :-

Course Overview: This course is an introduction to the students about the basic techniques of geometrical drawing, and teaches graphical representation of objects through various projection systems. Through hands-on practical studio exercises, the course introduces students to the application of technical drawing in architecture, and focuses on honing of manual drafting skills and imparting students with capabilities of visualizing 2D and 3D objects. The understanding of this course will act as a prerequisite for Descriptive Geometry II. Learning Objectives: 1. Getting acquainted with the IS codes for technical drawing. 2. Drawing conic sections and learning different engineering curves. 3. Using orthographic projection system for technical representation of 2D and 3D objects. 4. Understanding the concept of auxiliary planes, drawing sections of basic 3D objects. 5. Understanding the concept of intersection of solids, using basic solids i.e. cylinder, cone, prism etc. 6. Using development of surfaces to create 3D models of solids, their sections, and interpenetrations. Course Curriculum: Module 1 : Introduction to IS code of technical drawing; Conic sections and engineering curves Manual drawing techniques using T-sets, triangular sets, scales etc.; drawing sheet layout, use of scales; conic sections: ellipse, parabola, hyperbola; engineering curves: cycloid, trochoid, involutes Module 2 : Orthographic projection of lines, planes and solids; Orthographic projections of lines, traces of lines, true length of a line; projection of plane, projection of simple solids: cuboids, cones, cylinders, prisms and pyramids, spheres; projection of lines/ planes/ solids on auxiliary planes to find true length/true shape; projection of 3D objects of intermediate level difficulty Module 3 : Section of solids Sections of basic three dimensional objects/ solids: cuboids, cones, cylinders, prisms and pyramids, spheres; projections of 3D objects to find true shape of section/ inclination of section planes; use of auxiliary planes to find true shape Module 4 : Introduction of Development of surfaces and Intersection of surfaces Development of surfaces for rectilinear and curvilinear objects and preparing scaled models; Drawing intersection of two solids: both rectilinear, both curvilinear, one rectilinear and one curvilinear, and preparing scaled models Reading List: 1. Bhatt, N.D. and Panchal, V. M. (2014). Engineering drawing (53rd ed.). Charotar Publication. 2. Venugopal, K. (2004). Engineering drawing and graphics. New Age International. 3. Agarwal, B. and Agarwal, C. M. (2019). Engineering drawing (3rd ed.). Tata McGraw-Hill. 4. John, K.C. (2009). Engineering graphics for degree. Prentice Hall India Pvt. Ltd., 200