MME102: Engineering Graphics Lab

Programme: B.Tech. Year: 1st Semester: II
Course: Core for ME Credits: 2 Hours: 30

Course Objectives:

This course provides students basic knowledge of the graphical language used by engineers and technologists globally and helps the students to develop the skill to understand, communicate and document through the language of engineering drawing.

Course Outcomes:

CO:1	To provide the graduate engineering students with a background in descriptive geometry, orthographic & isometric projection, engineering drawing techniques, and computer-aided engineering graphics.	Unit1, Unit 2, Unit 8
CO:2	To provide the graduates with the ability and skills in point, line and plane relationships in projection; projection of solids, sections of a solid with sectional orthographic views.	Unit3, Unit 4, Unit 5, Unit 6
CO:3	To provide the graduates with skills in multi-view engineering drawings; auxiliary and section views; basic dimensioning; development of surfaces and engineering applications.	Unit 7

Detailed Syllabus:

Unit	Content	Hours	Student developments
1.	**Lines, Lettering, Numbering and Dimensioning:** Different types of lines used in practice, Method of dimensioning i.e. aligned & unidirectional systems, Lettering.	**3**	**Skill development and Employability**
2	**Orthographic Projections:** Horizontal planes, Vertical planes, Front view, Top view, Side view, Projections, First and Third angle of projection, Projections of points, Principles of orthographic projections, Sketching of different views of given objects.	**5**	**Skill development**

3	**Projections of Lines:** Line inclined to both the principal planes, Traces of lines, Distance of a point from a given line.	**4**	**Skill development**
4	**Projections of planes:** Projections of planes such as triangle, square, rectangle, rhombus, pentagon, hexagon, trapezium, circle, etc. Finding inclinations of surface with H.P. & V.P. Obtaining true shape of surface, angle between two planes, distance of a point from a given plane.	**4**	**Skill development**
5	**Projections of solids:** Projections of solids such as Pyramids, Prisms, Cones, and Cylinders. Axis inclined to both the reference planes and combination of solids.	**6**	**Skill development**
6	**Sections of solids and sectional orthographic views:** Projections of solids cut by AVP and AIP, Projection of true shape of section to locate the section plane, to obtain the given true shape of section, Sectional orthographic projections - Full, Half, Partial, revolved and removed surfaces.	**5**	**Skill development**
7	**Development of surfaces:** Development of lateral surfaces of solids, To draw development of cut solids, To draw development of transition pieces. (Two hollow solids of different cross sections) – To draw principle views from given developments.	**5**	**Skill development**
8	**Computer Aided Drafting (Auto CAD):** Advantages of using Computer Aided Drafting package, applications of Computer Aided Drafting, basic operation of drafting package, use of various commands for drawing, dimensioning editing, saving and printing plotting the drawing.	**8**	**Skill development and Employability**

Home assignment shall consist of Drill problems in drawing sketchbook.

TERM/SESSIONAL WORK

The term work shall consist of seven A2 (420X594 mm) or half imperial size drawing sheets and/or on a CAD software as detailed below:

Sheet No.1: Lines, Lettering and methods of dimensioning.

Sheet No.2: Orthographic Projections (At least 3 Examples)
Sheet No.3: Projection of points and Lines (At least 3 Examples for each topic)
Sheet No.4: Projection of Planes (At least 3 Examples)
Sheet No.5: Projection of Solids (At least 3 Examples)
Sheet No.6: Section of Solids (At least 3 Examples)
Sheet No.7: Development of Solids (At least 3 Examples)
Computer Aided Drafting: Assignment to be given

Evaluation criterion:
Midterm exam (Drawing on the sheets)-20%
Sessional work (Drawing on sheets and CAD software + Preparation of models) - 40%
End term Exam (Drawing on sheet and/or CAD software + Viva)-40%