

**Engineering Drawing II**  
**EG 1201 AR**

**Year: I**  
**Semester: II**

**Total: 4 hours /week**  
**Lecture: hours/week**  
**Tutorial: hours/week**  
**Practical: 4 hours/week**  
**Lab: hours/week**

**Course description:**

This course is designed to impart knowledge and skills on drawing pictorial view (in isometric and oblique) of the solid, surface development and intersection between two elements.

Instructors are requested to manage and deliver the related theoretical contents at drawing room just before conducting the specific practical work. All the theoretical and practical classes should be conducted with in total time of 60 Hours as allotted.

**Course objectives:**

After the completion of this course, students will be able to:

1. Analyze/ draw the different orthographic projections;
2. Analyze/draw the different pictorial projections;
3. Draw surface development and
4. Analyze/ draw intersection.

**Course Contents:**

**Theory**

**Unit 1. Axonometric Projection:** **[0.5 Hr.]**

- 1.1. Types of axonometric projection,
- 1.2. Introduction of axonometric projection
- 1.3. Isometric and oblique projection.

**Unit 2. Oblique Drawing:** **[0.5 Hr.]**

- 2.1. Oblique drawing
- 2.2. Measurement in receding axis
- 2.3. Rules for placing object in oblique (box method)
- 2.4. Cavalier and Cabinet projection
- 2.5. Making of Angle, Circular arc in oblique drawing

**Unit 3. Isometric Drawing:** **[0.5 Hr.]**

- 3.1 Isometric scale
- 3.2 Angle of receding axis
- 3.3 Isometric drawing and isometric projection
- 3.4 Isometric and Non-isometric line
- 3.5 Making of angle, circular arc in isometric view

**Unit 4. Projection of True length and shape of oblique line and shape:** **[0.5 Hr.]**

- 4.1. Introduction of oblique line
- 4.2. True length and angle to HP/VP of oblique line
- 4.3. True shape of oblique plane
- 4.4. Revolving method
- 4.5. Replacing Method

**Unit 5. Projection of intersection of line and plane** **[1 Hr.]**

- 5.1. Method of finding of intersection point
- 5.2. Method of finding the seen and hidden part of line

- 5.3. Method of finding the angle between plane and line

**Unit 6. Projection of Intersection plane and plane:** [0.5 Hr.]

- 6.1. Line of intersection  
6.2. Seen and hidden part of plane  
6.3. Finding the dihedral angle between two planes

**Unit 7. Projection of points and line on the surface of geometrical solids:** [0.5 Hr.]

- 7.1. Finding the points and lines by generating method  
7.2. Finding the points and line by cutting plane method

**Unit 8. Projection of intersection between line and geometrical solids:** [0.5 Hr.]

- 8.1. Projection of piercing point by generating method  
8.2. Projection of piercing point by cutting plane method

**Unit 9. Section:** [0.5 Hr.]

- 9.1. Introduction of section and its needed  
9.2. Sectional plane and sectional views  
9.3. Projection of sectional views  
9.4. Type of section- Longitudinal and cross section- Full section, half section, offset section, detail section etc.

**Unit 10. Projection of intersection between planes and simple geometrical solids and its Surface development with true shape of cut portion:** [0.5 Hr.]

- 10.1. Introduction sectional plane and solid  
10.2. Understanding the development of surfaces  
10.3. Method of development  
10.4. Method for development of cut surfaces

**Unit 11. Projection of intersection between surfaces of solids:** [1.5 Hrs.]

- 11.1. Introduction about surfaces of solids  
11.2. Type of cutting plane (Vertical/Horizontal projecting plane)  
11.3. Determination of line/curve of intersection  
11.4. After the intersection of two solids that shape will be occurring of touched at touched portion

**Practical (Class work sheet)**

**Sheet No 1:** [10 Hrs.]

1. Make the oblique view using by models or work pieces.  
2. Make oblique view by six models on flat or inclined surfaces.  
3. Make oblique view by six models on round and inclined/ flat surfaces.

**Sheet No 2:** [10 Hrs.]

1. Make the isometric view by models or work pieces.  
2. Make oblique view by six models on flat or inclined surfaces.  
3. Make oblique view by six models on round and inclined/ flat surfaces.

**Sheet No 3:** [3 Hrs.]

1. Find the true length of oblique line by revolving method. (At least three exercise on true length by revolving method)  
2. Find the true shape of oblique plane (Triangle) by replacing (Auxiliary view) method

**Sheet No 4:** [3 Hrs.]

1. Perform projection drawing of intersection of line a triangular plane showing the point of intersection,

2. Draw true shape of plane and angle between plane and line on the edge of given plane (At least two exercises should be done).

**Sheet No 5:**

**[3 Hrs.]**

Perform projection drawing of intersection plane and plane (two triangular planes) showing line of intersection and dihedral angle between two planes. (At least three exercises should be done).

**Sheet No 6:**

**[1 Hr.]**

1. Perform projection drawing of pyramid and cone with line(s) and point(s) of the surface finding in HP or VP as missing in one plane.

**Sheet No 7:**

**[3 Hrs.]**

1. Perform projection drawing of full section and half sectional view of model which has through hole (At least two exercises should be done of this topic).

**Sheet No 8:**

**[2 Hrs.]**

1. Draw intersection between line and cylinder, pyramid cone, and sphere, showing the piercing points.

**Sheet No 9:**

**[10 Hrs.]**

1. Perform/draw square prism, pentagonal prism, hexagonal prism, cylinder and cone cut by a vertical projecting plane (Inclined to HP and perpendicular to VP) with true shape.
2. Perform/draw square, pentagonal, hexagonal, base pyramid, cone and sphere cut by a vertical projecting plane (inclined to HP and perpendicular to VP) with true shape.
3. Exercise on above mentioned pyramid and cone cut by a horizontal projecting plane (inclined to VP and perpendicular to HP)
4. Perform/draw surface development of prism (Triangular, square, pentagonal, hexagonal base), cylinder at simple position (uncut state).
5. Perform/draw surface development of pyramid and cone after the cut by sectional plane (truncated solid).

**Sheet No 10:**

**[8 Hrs.]**

Perform/draw projection drawing of intersection of two surfaces of two solids (intersection of two solids) on:

1. Vertical (right) prism and horizontal prism of different size.
2. Vertical (right) cylinder and horizontal cylinder of different size.
3. Vertical (right) cylinder and horizontal prism.
4. Vertical (right) cone and prism.
5. Vertical (right) cone and cylinder.
6. Vertical (right) pyramid and prism.

**References:**

1. Luzzadar W. I Fundamental of Engineering drawing. Prentice-Hall of India.
2. S. Bogolyubov and A. Voinov, Engineering drawing. Mir Publishers, Moscow.
3. S. K Bogolyubov, Exercises in Machine Drawing. Mir publishers, Moscow.
4. K. Venugopal Engineering Drawing and Graphics, New age international (p) Ltd. India.
5. Gill P. S. Engineering Drawing, S. K. Kataria and sons India.
6. M. B. Shah and B.C. Rana, Engineering Drawing, Pearson India.
7. N. D. Bhatta and Panchal V.M. Engineering Drawing Charotar publishing House India.