Engineering Graphics (ME121)

Projection of Lines and Planes

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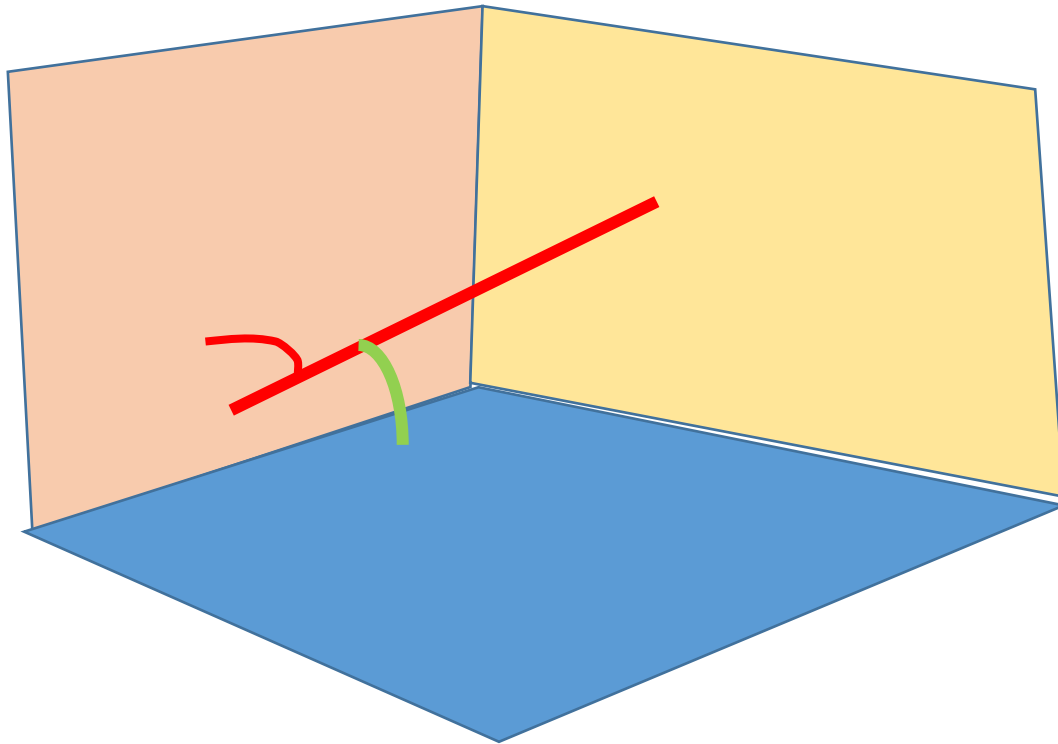Email:- anikeshmechanical@gmail.com
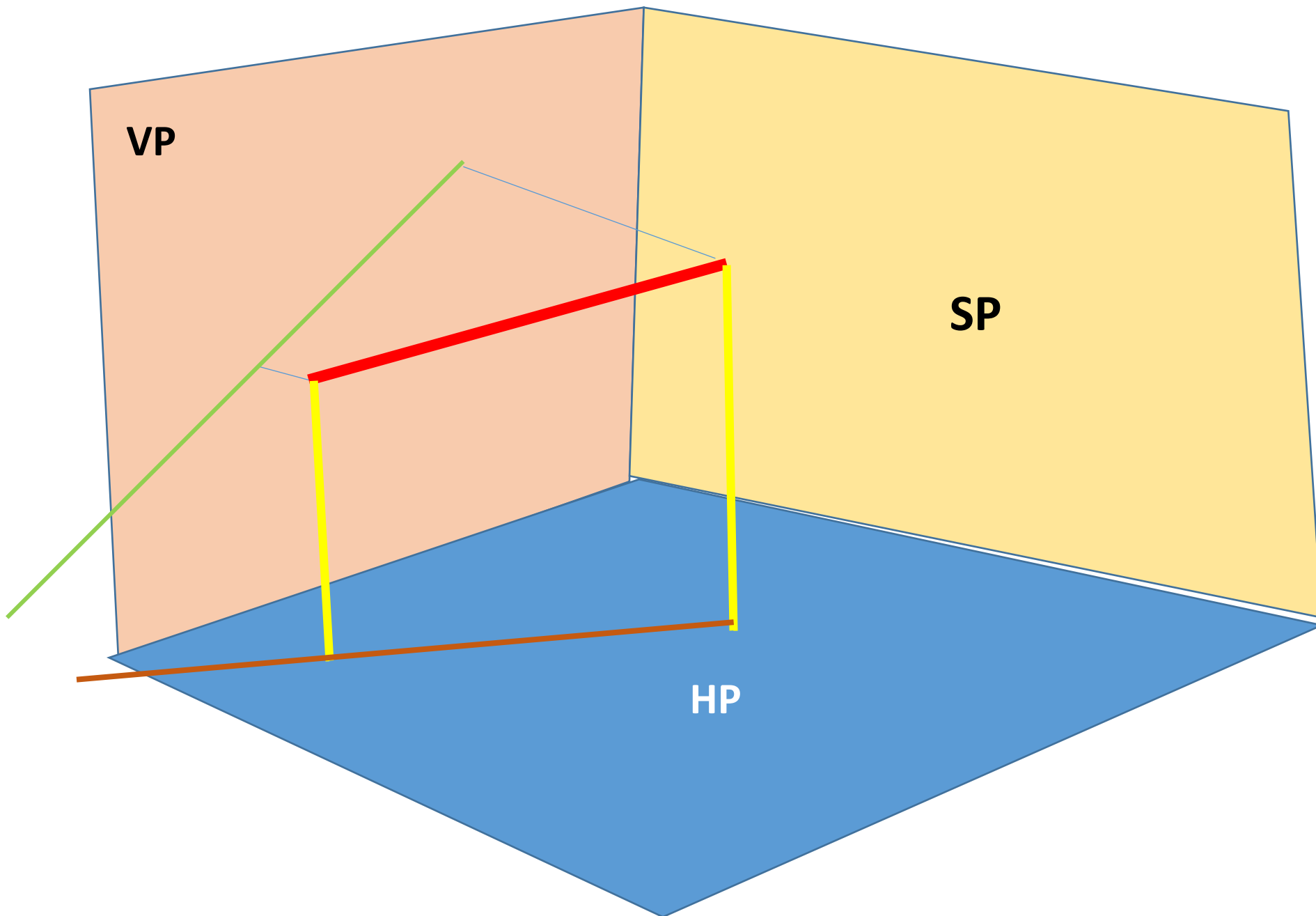
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Topics

1. Projection of line
2. Projection of Plane
3. Introduction of Solid projection
4. Exercise

Projection of Line

- Line is inclined to both the planes

Exercise(1st angle)

1. A line AB, 50 mm long, has its end A in both the HP and the VP. It is inclined at 30° to the HP and at 45° to the VP. Draw its projections

2. A line PQ 75 mm long, has its end P in the VP and the HP. The line is inclined at 30° to the HP and 60° to the VP. Draw its projections.

3. A line AB, 75mm long, is inclined at 45° to the HP and 30° to the VP. Its end B is in the HP and 40 mm in front of the VP. Draw its projections and determine its traces.

4. The TV of a 75 mm long line measures 65 mm, while the length of its front view is 50 mm. its one end A is in the HP and 12 mm in front of the VP. Draw the projections of AB and determine its inclinations with the HP and VP.

5. A line AB, 65 mm long, has its end A 20 mm above the HP and 25 mm in front of the VP. The end B is 40 mm above the HP and 65 mm in front of the VP. Draw the projections of AB and show its inclinations with HP and VP.

Steps to draw projection of line inclined with both plane

1. Assume line is parallel to both the planes.

2. Draw projection with first step condition and as per position of point.

3. Rotate its FV as per given condition and mark true length on rotated view (by making arc with radius to actual length and center as Piot point) and make a parallel line (Locus line) above xy at that point and draw a projector line which intersect the TV which we get in step 2 mark this point as 1 suffix.

4. Now rotate its TV as per given condition and mark true length on rotated view (by making arc with radius to actual length and center as Piot point) and make a parallel line (Locus line) above xy at that point and draw a projector line which intersect the FV which we get in step 2 mark this point as 1 suffix.

5. The new position point (with 1 suffix) in FV and TV is now move on locus line and it will archive by taking an arc of radius equal to Piot point to new point (with 1 suffix) and make an arc with center as piot point and arc intersect the locus line and mark as 2 suffix now join the piot point with this news position for respective views. These are the final FV and TV and angles are greater than actual inclinations these angles are known as apparent angles

Projection of Plane

1. Plane is area inscribed by lines
2. Plane are two types: (a) perpendicular plane (b) oblique plane
    a) Perpendicular planes
        I. Perpendicular to both planes
        II. Perpendicular to one plane and parallel to other
        III. Perpendicular to one plane and inclined to other
    b) Oblique plane: plane has its surface inclined to one plane and an edge or a diameter or a diagonal parallel to that plane and inclined to other plane.