

## Summary

From this lecture you learnt that every equation of first degree in  $x, y, z$  represent a plane.

The equation  $ax+by+cz+d=0$  represent plane in general form.

General equation of a plane passing through  $(x, y, z)$  is given by  $a(x-x_1)+b(y-y_1)+c(z-z_1)=0$ .

Equation of a plane that passes through the origin is given by  $ax+by+cz=0$ .

Equation of the plane parallel  $x$ -axis is given by  $by+cz+d=0$ .

The equation of intercept form of the plane is  $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$

The equation of the normal form of a plane is  $lx+my+nz=p$ .

The equation of the straight line passing through the point  $(\alpha, \beta, \gamma)$  and having directional cosines  $l, m, n$  is given by  $\frac{x-\alpha}{l} + \frac{y-\beta}{m} + \frac{z-\gamma}{n} = AP$  where  $AP$  is the distance between the points.

The equations of two planes simultaneously give the equation of a straight line in non-symmetrical form.

$$a_1x+b_1y+c_1z+d_1=0$$

$$a_2x+b_2y+c_2z+d_2=0$$