

## Syllabus for TS EAPCET 2024 - E Stream (Engineering Stream)

- c) **The Straight Line:** Revision of fundamental results - Straight line - Normal form - Illustrations - Straight line - Symmetric form - Straight line - Reduction into various forms - Intersection of two Straight Lines - Family of straight lines - Concurrent lines - Condition for Concurrent lines - Angle between two lines - Length of perpendicular from a point to a Line - Distance between two parallel lines - Concurrent lines - properties related to a triangle.
  - d) **Pair of Straight lines:** Equations of pair of lines passing through origin - angle between a pair of lines - Condition for perpendicular and coincident lines, bisectors of angles - Pair of bisectors of angles - Pair of lines - second degree general equation - Conditions for parallel lines - Distance between them, Point of intersection of pair of lines - Homogenizing a second degree equation with a first degree equation in x and y.
  - e) **Circle:** Equation of circle -standard form-centre and radius Position of a point in the plane of a circle - Definition of tangent. Position of a straight line in the plane of a circle conditions for a line to be tangent - chord of contact and polar. Relative positions of two circles.
  - f) **System of circles:** Angle between two intersecting circles - Radical axis of two circles
  - g) **Parabola:** Conic sections - Equations of tangent and normal at a point on the parabola
  - h) **Ellipse:** Equation of ellipse in standard form- Parametric equations - Equation of tangent and normal at a point on the ellipse.
  - i) **Hyperbola:** Equation of hyperbola in standard form - Parametric equations - Equations of tangent and normal at a point on the Hyperbola.
  - j) **Three Dimensional Coordinates:** Coordinates - Section formulae.
  - k) **Direction Cosines and Direction Ratios:** Direction Cosines - Direction Ratios.
  - l) **Plane:** Cartesian equation of Plane - Simple Illustrations.
- 6) **CALCULUS:**
- a) **Limits and Continuity:** Intervals and neighbourhoods - Limits - Standard Limits - Continuity.
  - b) **Differentiation:** Derivative of a function - Elementary Properties - Trigonometric, Inverse Trigonometric, Hyperbolic, Inverse Hyperbolic Function.
  - c) **Derivatives** - Methods of Differentiation - Second Order Derivatives.
  - d) **Applications of Derivatives:** Errors and approximations - Geometrical Interpretation of a derivative - Equations of tangents and normals - Lengths of tangent, normal, sub tangent and sub normal. Angles between two curves and condition for orthogonality of curves - Derivative as Rate of change - Rolle's Theorem and Lagrange's Mean value theorem. Increasing and decreasing functions - Maxima and Minima.
  - e) **Integration:** Integration as the inverse process of differentiation- Standard forms - properties of integrals - Method of substitution. Integration of Algebraic, exponential, logarithmic, trigonometric and inverse trigonometric functions. Integration by parts, Integration by the method of substitution - Integration of algebraic and trigonometric functions, Integration by parts- Integration of exponential, logarithmic and inverse trigonometric functions, Integration-partial fractions method, reduction formulae.

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- f) **Definite Integrals:** Definite Integral as the limit of sum - Interpretation of Definite Integral as an area - Fundamental theorem of Integral Calculus - Properties - Reduction formulae. Application of Definite integral to areas.
- g) **Differential equations:** Formation of differential equation - Degree and order of an ordinary differential equation. Solving differential equation by Variables separable method, Homogeneous differential equation, non-homogeneous differential equation, Linear differential equations.

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