B. Tech. –I Sem.-I	**L**	**T**	**P**	**C**
ASM 101: Eng. Mathematics- I	**3**	**1**	**0**	**4**

- **CALCULUS** **(07 Hours)**
  Reorientation of calculus. Differentiation of Hyperbolic and Inverse Hyperbolic functions. Successive Differentiation, standard forms, Leibnitz's theorem and applications, Power series, Expansion of functions, Taylor's and Maclaurin's series.

- **APPLICATIONS OF DERIVATIVES** **(08 Hours)**
  Curvature, Radius of curvature, Cartesian, polar parametric curve with application in Engineering problems. Indeterminate forms, L'Hospital's rules.

- **ORDINARY DIFFERENTIAL EQUATION** **(08 Hours)**
  Reorientation of differential equation, Exact differential equation and Integrating factors, First order and higher degree odes, solvable for p, y and x, Modeling of Real world problems particularly Engg. System, spread of epidemic, spread of new technological innovations, RC and RL network.

- **CURVE TRACING** **(05 Hours)**
  Cartesian, polar and parametric form of standard curves.

- **BETA AND GAMMA FUNCTION** **(04 Hours)**
  Beta and Gamma function with their properties and duplications formula without proof.

- **APPLICATION OF DEFINITE INTEGRATION** **(05 Hours)**
  Area, arc length, surface area by revolving curve, volume by revolving area bounded by curve for Cartesian, polar and parametric curves.

- **MATRICES** **(07 Hours)**
  Elementary row and column transformation, rank of matrix, Linear dependence, consistency of linear system of equations, characteristic equation, Caley –Hamilton theorem, Eigen value, Eigen vector.

(Total Contact Time : 44 Hours)

BOOKS RECOMMENDED :

1. James Steward De Calculas, Thomson Asia, Singapore, 2003.
2. Bali and Iyengar. Engg. Mathematics, Laxmi Publications, New Delhi.
3. O'Neil Peter., 'Advanced Engg. Mathematics', Thompson, Singapore, Ind. Ed. 2002.
4. J. N. Kapur , Mathematical Models in Biology and Medicine. East west Press, New Delhi 1985.
5. F. B. Hilderband, Methods of Applied mathematics, PHI, New Delhi, 1968

B. Tech.-I Sem.-II	L	T	P	C
ASM 201: Eng. Mathematics- II	**3**	**1**	**0**	**4**

- **DIFFERENTIAL CALCULUS** **(07 Hours)**
  Partial differentiation, Euler's theorem for homogeneous function, Modified Euler's theorem, Taylor's and Maclaurins series for two variables.

- **APPLICATIONS OF PARTIAL DIFFRENTATION** **(08 Hours)**
  Tangent plane and Normal line Error and Approximation, Jacobians with properties, Extreme values of function of two variables, Lagrange's methods of undetermined multipliers.

- **DIFFERENTIAL EQUATION OF HIGHER ORDER** **(08 Hours)**
  Solution of homogenous equations, complementary functions, Particular Integrals, Linear differential equation with variable coefficient, Cauchy's Euler and Legendre's equation with variable coefficient, Method of variation of parameters.

- **MATHEMATICAL MODELS** **(07 Hours)**
  Electrical network models, Detection of diabetes model and Bending beam models.

- **SERIES SOLUTION AND SPECIAL FUNCTIONS** **(07 Hours)**
  Regular point , Singular point, series solution of ODE of 2 nd order with variable coefficient with special emphasis to differential equation of Legendre's and Bessel's for different cases of roots of indicial equations.

- **LAPLACE TRANSFORM** **(07 Hours)**
  Laplace transform, Existance theorem, Laplace transform of derivatives and integrals, Inverse Laplace transform, Unit step functi ons, Dirac – delta functions , Laplace transform of periodic functions, Convolutions theorem, Application to solve simple linear and simultaneous differential equations.

(Total Contact Time: 44 Hours)

BOOKS RECOMMENDED :

1. E. Kreyszig : Advanced Engg. Mathematics. 8th Ed, John Wiley & Sons., New York.
2. Jain and Iyenger , Advanced Engg. Mathematics, Narosa Publications, New Delhi.
3. James Steward, Calculas, Thomson Asia, 5 edition, Singapore, 2003.
4. J. N. Kapur , Mathematical Models in Biology and Medicine, Eas t west press.
5. F. B. Hilderbrand , Methods of Applied Mathematics, McGraw Hill, New York