



Syllabus for the Academic Year : 2019 - 2020

For Lateral Entry Students (Common to all)

Department: Mathematics
Subject Name: Fundamental Mathematics

Semester: III

Subject Code: 18DIP300/306

L-T-P-C: 3-0-0-3

Course Objectives : The purpose of this course is to make students to

| Sl.No | Course Objectives |
|-------|--|
| 1 | Introduce concept of nth derivative and Multiple integrals.. |
| 2 | Introduce the concept of differential equations. |
| 3 | Introduce concept of probability. |
| 4 | Study the concept of partial differential equations. |

Course Outcomes

| Course outcome | Descriptions |
|----------------|---|
| CO1 | To understand the basic concept of differentiation and integration |
| CO2 | To understand the concepts of partial differentiation and differential equations arising in a variety of engineering applications |
| CO3 | To understand the double and triple integrals. |
| CO4 | To apply the concept of probability in problem solving and solutions to the various engineering streams |



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| UNIT | Description | Hours |
|------------|---|-----------|
| I | Differential Calculus: n^{th} derivatives of some standard functions (without proof), Leibnitz's Theorem(statement), Polar curves –angle between the radius vector and the tangent pedal equation- Problems. Taylor's and Maclaurin's series expansions of one variable - Illustrative examples. | 08 |
| II | Partial Differentiation : Partial derivatives, Euler's theorem for homogeneous functions of two variables. Total derivatives, Total differential, differentiation of composite and implicit function, Jacobians. | 08 |
| III | Integral Calculus: Statement of reduction formulae for $\sin^n x$, $\cos^n x$, and $\sin^m x \cos^n x$ and evaluation of these with standard limits-Examples. Double and triple integrals-Simple examples. | 08 |
| IV | Ordinary differential equations (ODE's): Introduction-solutions of first order and first degree differential equations, exact, linear differential equations . Higher order ODE's: Linear differential equations of second and higher order equations with constant coefficients. Homogeneous /non-homogeneous equations. Solutions of initial value problems. | 09 |
| v | Probability: Introduction, Sample space and events. Axioms of probability. Addition and multiplication theorems, Conditional probability-illustrative examples. Baye's theorem-problems. | 06 |

Text Books:

| Sl No | Text Book title | Author | Volume and Year of Edition |
|----------|---|-------------|-----------------------------|
| 1 | Higher Engineering Mathematics, Khanna Publishers | B.S. Grewal | 42nd 2018 |



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| 2 | Advanced Engineering Mathematics, John Wiley & Sons | E. Kreyszig | 10th 2011 |
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Reference Book:

| Sl No | Text Book title | Author | Volume and Year of Edition |
|--------------|--|--------------------------------|--|
| 1 | “Advanced Engineering Mathematics” | C. Ray Wylie, Louis C. Barrett | 6 th Ed. McGraw-Hill Book Co., New York, 1995. |
| 2 | “A Text Book of Engineering Mathematics” | N.P.Bali and Manish Goyal | Laxmi Publishers, 7 th Ed., 2010 |
| 3 | “Higher Engineering Mathematics” | B.V.Ramana | Tata McGraw-Hill, 2010 |
| 4 | “Engineering Mathematics for First year” | Veeraranjan T. | Tata McGraw-Hill, 2008 |
| 5 | “Advanced Engineering Mathematics” | Peter V. O’Neil, | 7 th Edition, 2010 Cengage Learning, Publishers U.S.A. |