Course Name	Mathematics II
Course Name	Mathematics II
Course Code	M(EE)201
Course Credit	4
Contact Hour	3L-1T
Prerequisite	
Course Objective	

The objectives of this course are

Course Outcome

On completion of the course students will be able to

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1												
CO 2												
CO 3												
CO 4												
CO 5												

Course Content

Module I: Ordinary differential equations (First order)   10L

First order and first degree Exact equations,Necessary and sufficient condition of exactness of a first order and first degree ODE (statement only), Rules for finding Integrating factors, Linear equation, Bernoulli's equation, General solution of ODE of first order and higher degree (different forms with special reference to Clairaut's equation), Applications related to Engineering problems.

Module II: Ordinary differential equations (Higher order)   10L

General linear ODE of order two with constant coefficients, C.F. & P.I., D-operator methods for finding P.I., Method of variation of parameters, Cauchy-Eulerequations, Solution of simultaneous linear differential equations, Applications related to Engineering problems.

Module III: Basic Graph Theory   10L

Graphs, Digraphs, Weighted graph, Connected and disconnected graphs, Complement of a graph, Regular graph, Complete graph, Subgraph, Walks, Paths, Circuits, Euler Graph, Cut-sets and cut-vertices, Matrix representation of a graph, Adjacency and incidence matrices of a graph, Graph isomorphism, Bipartite graph.Tree, Binary tree, Spanning tree of a graph, Minimal spanning tree, properties of trees, Algorithms: Dijkstra's Algorithm for shortest path problem, Determination of minimal spanning tree using Kruskal's and Prim's algorithm.

** Extra lecture hours may be taken for this module

Module IV: Combinatorics   10L

Fundamental Principles, Permutations, Combinations, Binomial coefficients,

Probability: Classical, relative frequency and axiomatic definitions of Probability, Addition rule, Conditional probability, Multiplication rule, Independent events, Total probability, Baye's theorem. Applications from Related Engineering Problems.

[Beyond syllabus]: Random variables, Binomial, Poisson and Normal Distribution.

Text / Reference Books:

1. E. Kreyszig, Advanced engineering mathematics (8th Edition), John Wiley, 1999.

2. B.S.Grewal, Higher Engineering Mathematics, Khanna Publications, 2009.

3. R.K.Jain and S.R.K.Iyengar, Advanced Engineering Mathematics, Narosa Pub. House, 2008.

4. W. E. Boyce and R. DiPrima, Elementary Differential Equations (8th Edition), John Wiley, 2005.

5. R.K. Ghosh and K.C.Maity, An Introduction to Differential Equations, New Central Book Agency.

6. V. K. Balakrishnan,Graph Theory, Schaum's Outline, TMH.

7. J. Clark and D. A. Holton, A first course at Graph Theory,Allied Publishers LTD.

8. D. B. West, Introduction to Graph Theory,Prentice-Hall of India.

9. N. Deo, Graph Theory, Prentice-Hall of India.

10. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand & Sons.

11. N.G. Das, Statistical Methods, Tata McGraw Hill.

12. J. Bird, Higher Engineering Mathematics (4th Edition, 1st India Reprint), Elsevier, 2006.

13. L. Rade and B. Westergen, Mathematics Handbook: for Science and Engineering (5th edition,1st Indian Edition), Springer, 2009.