TCET
DEPARTMENT OF INFORMATION TECHNOLOGY (IT)
Credit Based Grading Scheme(Revised - 2012) - University of Mumbai
CBGS-2012(R)

tcet
IT
BRIGHT ENGINEERS

tcet
Estd. 2001

Semester Plan
(Theory)

TCET/FRM/IP-02/09

Revision: A

Semester: III

Course: IT

Subject: ITC - 301: Applied Mathematics - III

Class: SE IT -A

S.No.	Prerequisite/ Bridge course:	Duration (Week /Hrs)	Modes of Learning	Recommended Sources
1	Complex numbers, Partial Differentiation, Indeterminate Forms, Expansions of Function, Standard Integration forms, Gamma Function, Differential Equation, Partial fraction, Limits, Continuity and Differentiability	2 Hours	Self Learning/ Revision	**Textbooks:** 1. Higher Engineering Mathematics by B. S. Grewal 2. A Text Book of Applied Mathematics Vol. I & II by P. N. Wartilar & J. N. Wartikar

Class Room Teaching

Sr. No	Module No.	Lesson No	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
1		L1.1	SOP- Theory Orientation about Applied mathematics III	Power point presentation, Chalk & Board	11/7/2017		
2		L1.2	SOP- OBE Orientation about OBE Prerequisite : Basic of AM-I and AM-II	Power point presentation, Chalk & Board	11/7/2017		
3	Module 3	L1.3	Introduction to Laplace Transform (LT), Definition, Standard formulas of Laplace	Chalk & Board, Videos	13/7/2017	1.9	
4	Module 3	L1.4	Linearity property of LT , Change of scale for LT, first shifting theorem for LT	Chalk & Board, Videos	13/7/2017	1.13, 1.14, 1.15	
5	Module 3	L2.1	Second shifting theorem from LT, Laplace of multiplication by t, Laplace of division by t	Chalk & Board	17/7/2017	1.16, 1.17	
6	Module 3	L2.2	Laplace Transform of derivatives and integrals	Chalk & Board	17/7/2017	1.18	
7	Module 3	L2.3	Application of Laplace for evaluating integral	Chalk & Board	18/7/17	1.19	
8	Module 3	L2.4	LT of periodic function	Chalk & Board	19/7/17	1.12	
9	Module 3	L2.5	LT of Heaviside unit step and problems based on it	Chalk & Board	20/7/17	1.10	
10	Module 3	L2.6	LT of Dirac-delta function and problems based on it	Chalk & Board	21/7/2017	1.11	
11	Module 4	L3.1	Introduction to inverse Laplace transform and Inverse LT by standard formulas	Chalk & Board	24/7/2017	2.9	

12	Module	4	L3.2	Inverse LT by first shifting	Chalk & Board	25/7/2017	2.10	
13	Module	4	L3.3	Inverse LT by partial fraction method	Chalk & Board	26/7/2017	2.11	
14	Module	4	L3.4	Inverse LT by convolution theorem	Chalk & Board	27/7/2017	2.12, 2.13	
15	Module	4	L3.5	Inverse LT by Heaviside unit step	Chalk & Board	28/7/2017	2.14	
16	Module	4	L4.1	Applications of Laplace Transform to solve initial value and boundary value problem involving ordinary differential equations	Chalk & Board	31/7/2017	2.15	
17	Module	5	L4.2	Introduction of Complex Variable and analytic function	Chalk & Board	1/8/2017	3.9	
18	Module	5	L4.3	Cauchy Riemann equation in Cartesian form and in polar form, problems	Chalk & Board	2/8/2017	3.9	
19	Module	5	L4.4	Harmonic functions and problems based on it	Chalk & Board	4/8/2017	3.10	
20	Module	5	L4.5	Analytic method and Milne's Thomson method to find f(z)	Chalk & Board	5/8/2017	3.10	
21	Module	5	L4.6	Orthogonal trajectories and problems	Chalk & Board	5/8/2017	3.10	
22	Module	5	L5.1	Conformal mapping and problems	Chalk & Board	7/8/2017	3.11	
23	Module	5	L5.2	Inversion, Translation problems	Chalk & Board	8/8/2017	3.11	
24	Module	5	L5.3	Bilinear transformations, cross ratio, fixed points	Chalk & Board	9/8/2017	3.11	
25	Module	1	L5.4	Set Theory Definition of Sets, Venn Diagrams and problems based on it	Chalk & Board	11/8/2017	4.9	
26	Module	1	L6.1	Set Theory Complements, Cartesian products, Power sets and problems	Chalk & Board	14/8/2017	4.10	
27	Module	1	L6.2	Counting principle and problems based on it	Chalk & Board	16/8/2017	4.10	
28	Module	1	L6.3	Cardinality and Countability and problems	Chalk & Board	18/8/2017	4.11	
29	Module	1	L8.1	Proofs of some general identities on sets	Chalk & Board	30/8/2017	4.12	

30	Module 1	L8.2	Pigeonhole principle	Chalk & Board	1/9/2017	4.13	
31	Module 1	L9.1	Problems based on Pigeonhole principle	Chalk & Board	4/9/2017	4.13	
32	Module 2	L9.2	Relation: Definition, Types of relation, Ccomposition of relations	Chalk & Board	5/9/2107	5.10	
33	Module 2	L9.3	Domain and range of a relation	Chalk & Board	6/9/2017	5.10	
34	Module 2	L9.4	Pictorial representation of relation, properties of relation	Chalk & Board	8/9/2107	5.10	
35	Module 2	L10.1	Partial ordering relation	Chalk & Board	11/9/2107	5.10	
36	Module 2	L10.2	Function: Definition and types of function	Chalk & Board	12/9/2107	5.11	
37	Module 2	L10.3	Composition of functions	Chalk & Board	13/9/2107	5.11	
38	Module 2	L10.4	Recursively defined functions	Chalk & Board	15/9/2107	5.11	
39	Module 6	L11.1	Permutations, combinations and Probability Rule of sum and product	Chalk & Board	18/9/2107	6.9	
40	Module 6	L11.2	Permutations, combinations and Probability Rule of product	Chalk & Board	19/9/2107	6.9	
41	Module 6	L11.3	Permutations and problems based on it	Chalk & Board	20/9/2107	6.90	
42	Module 6	L11.4	Combinations and problems based on it	Chalk & Board	22/9/2107	6.10	
43	Module 6	L12.1	Algorithms for generation of Permutations	Chalk & Board	25/9/2107	6.10	
44	Module 6	L12.2	Algorithms for generation of Combinations	Chalk & Board	26/9/2107	6.10	
45	Module 6	L13.1	Discrete Probability	Chalk & Board	3/10/2107	6.10	
46	Module 6	L13.2	Conditional Probability	Power point presentation, Chalk & Board	4/10/2107	6.11	
47	Module 6	L13.3	Bayes' Theorem	Chalk & Board	6/10/2107	6.11	
48	Module 6	L13.4	Problems on Bay's Theorem	Chalk & Board	7/10/2017	6.11	
Remark: Course:		Syllabus Coverage:		Practice Session: 2		**Content Beyond Syllabus:** Class of Integral Transform and kernel e.g. Mellin Transform, Hankel Transform and their Applications to solve differential equations and system of differential equations.	
No. of (lectures planned)/(lecture taken): 48							

			Web sources:
Advanced course: 1. Advanced Engineering Mathematics 2. Regression Analysis	20 Hours	Online NPTEL videos /courses	1. NPTEL-https://onlinecourses.nptel.ac.in 2. Wikipedia-https://en.m.wikipedia.org **Textbook reference:** Advanced Engineering Mathematics

Text Books:

1. Advanced Engineering Mathematics by C. Ray Wylie & Louis Barrett, TMH International Edition
2. Mathematical Methods of Science and Engineering by Kanti B. Datta, Cengage Learning
3. Laplace Transforms by Murray R. Spiegel, Schaun's out line series-McGraw Hill Publication

Reference Books:

1. Higher Engineering Mathematics by Grewal B. S. 38th edition, Khanna Publication 2005.
2. Advanced Engineering Mathematics by Kreyszig E. 9 th edition, John Wiley.
3. A Text Book of Applied Mathematics Vol. I & II by P. N. Wartilar & J. N. Wartikar, Pune, Vidyarthi Griha Prakashan, Pune.
4. Modern Digital Electronics by R. P. Jain 8th edition, Tata Mcgraw Hill
5. C. L. Liu and D. P. Mohapatra, "Elements of Discrete Mathematics", SiE Edition, TataMcGraw-Hill.

Digital Reference:
1. NPTEL-https://onlinecourses.nptel.ac.in
2. Wikipedia-https://en.m.wikipedia.org

sd/-	sd/-	sd/-
Name & Signature of Faculty	Signature of HOD	Signature of Principal /Dean (Academics)

Date: Date: Date:

Note:

1. Plan date and completion date should be in compliance

2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc.

3. Planning is to be done for 15 weeks where 1st week will be AOP, 2nd -13th for effective teaching and 14th -15th week for effective university examination oriented teaching, mock practice session and semester consolidation.
4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs and in case of 3 lectures per week minimum 45 lectures are to be engaged are required to be engaged during the semester and therefore accordingly semester planning for delivery of theory lectures shall be planned.

5. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning course and programme objectives.

6. Text books and reference books are available in syllabus. Here only additional references w.r.t. non –digital/ digital sources can be written (if applicable)

7. Technology to be used in class room during lecture shall be written below the topic planned within the bracket.