TCET

DEPARTMENT OF ELECTRONICS ENGINEERING (ETRX)

Credit Based Grading Scheme(Revised - 2012) - University of Mumbai

CBGS-2012(R)

Semester Plan

TCET/FRM/IP-02/10 **(Theory)** **Revision: A**

Semester: III **Course: ETRX**

Subject: Applied Mathematics III **Class: SE ETRX**

Sr.No.	Prerequisite/ Bridge course:	Duration (Week /Hrs)	Modes of Learning	Recommended Sources
1	Standard Integral Forms, Partial fraction, Limits, Continuity and Differentiability, concept of Partial differential equations, concept of vector Algebra,	6 hours	Self Learning/ Revision	1. Advanced Calculus - Schaum's Series; Murray Spiegel 2.Advanced Engineering Mathematics - Kreyzig.

Class Room Teaching

Sr.No	Module No.	Lesson No.	Topics Planned	Teaching Aids Required	Planned Date	Completed Date	Recourse Book Reference	Remark
1	-	L1.1	Orientation of Subject AM III (Theory)	PPT	10-07-17		-	
2	-	L1.2	Orientation of Subject AM III (Outcome Base Education)	PPT	11-07-17		-	
3	M_1	L1.3	Introduction to Laplace Transform:Definition,Condition of Existence of Laplace transform	Chalk Board, PPT	13-07-17		1.7,1.8	
4	M_1	L1.4	Laplace Transform (LT) of Standard Functions: Laplace transform of eat , Sin(at), cos(at), sinh(at), cosh(at), tn	Chalk Board, PPT	14-07-17		1.8,1.9	
5	M_1	L2.1	Properties of LT: Linearity, Change of scale, first shifting theorem	Chalk Board, PPT	17-07-17		1.10,1.11,1.12	
6	M_1	L2.2	second shifting theorem, Laplace of multiplication by t, Laplace of division by t	Chalk Board	19-07-17		1.13,1.14,1	
7	M_1	L2.3	Laplace Transform of derivatives and integrals	Chalk Board	20-07-17		1.15	
8	M_1	L2.4	Evaluation of integrals using LT	Chalk Board	21-07-17		1.16	
9	M_1	L2.5	Problems on Heaviside unit step, Dirac-delta function and problems	Chalk Board	21-07-17		1.17,1.18	
10	M_1	L3.1	LT of periodic function	Chalk Board	24-07-17		1.19	
11	M2	L3.2	Introduction to inverse Laplace transform(ILT), Inverse LT of Standard Functions,First Shifting Theorem of ILT	Chalk Board	25-07-17		2.9,2.10	
12	M2	L3.3	Inverse Laplace Transform by partial fraction Methods	Chalk Board, PPT	26-07-17		2.11	
13	M2	L3.4	Inverse LT by convolution theorem	Chalk Board	27-07-17		2.12	
14	M2	L4.1	Laplace Inverse by derivative	Chalk Board,	31-07-17		2.13,2.14	

Sr.No	Module No.	Lesson No.	Topics Planned	Teaching Aids Required	Planned Date	Completed Date	Recourse Book Reference	Remark
15	M2	L4.2	Applications of Laplace Transform:Solution of ordinary differential equations	Chalk Board	01-08-17		2.15	
16	M2	L4.3	Solving RLC circuit differential equation of first order and second order with boundary condition using Laplace transform	Chalk Board	02-08-17		2.15	
17	M2	L4.4	Introduction of Complex Variable: Analytic Function,Necessary and sufficient conditions to be analytic function	Chalk Board	03-08-17		3.9	
18	M3	L5.1	Cauchy Riemann equation in Cartesian form and in polar form, problems	Chalk Board	07-08-17		3.a3,3a.10	
19	M3	L5.2	Milne's Thomson method & its application to find f(z)	Chalk Board,	08-08-17		3a.1	
20	M3	L5.3	Harmonic functions and problems based on it	Chalk Board	09-08-17		3a.1	
21	M3	L5.4	Orthogonal trajectories and problems	Chalk Board	10-08-17		3a.1	
22	M3	L5.5	Conformal mapping and problems	Chalk Board	11-08-17		3a.11	
23	M3	L6.1	Bilinear transformations, cross ratio, fixed points	Chalk Board	14-08-17		3a.11	
24	M3	L6.2	Bessel Functions:Bessel's differential equation	Chalk Board	16-08-17		3b.9	
25	M3	L7.1	Properties of Bessel function of order +1/2 and -1/2	Chalk Board	24-08-17		3b.10	
26	M4	L8.1	Generating function, expression of $\cos(x\sin\theta)$, $\sin(x\sin\theta)$ in term of Bessel functions	Chalk Board	30-08-17		3b.11	
27	M4	L8.2	Introduction to Fourier Series (FS): Definition, Dirichlet's conditions,Euler's formulae	Chalk Board	31-08-17		4.9	
28	M4	L9.1	Fourier series of periodic functions with period 2π	Chalk Board	04-09-17		4.9	
29	M4	L9.2	Fourier series of periodic functions with period $2l$	Chalk Board	05-09-17		4.90	
30	M4	L9.3	Fourier series of even and odd functions	Chalk Board	06-09-17		4.10	
31	M4	L9.4	Fourier half range Sine and Cosine series	Chalk Board	07-09-17		4.11	
32	M4	L10.1	Orthogonal and Orthonormal set of functions	Chalk Board	11-09-17		4.13	
33	M4	L10.2	Complex form of Fourier Series	Chalk Board	12-09-17		4.12	
34	M4	L10.3	Fourier Integral Representation	Chalk Board	13-09-17		4.14	
35	M5	L10.4	Fourier Transform of constant and exponential function	Chalk Board	14-09-17		4.15	
36	M5	L11.1	Inverse Fourier transform of constant and exponential function	Chalk Board, PPT	18-09-17		4.15	
37	M5	L11.2	Review of Scalar and Vector Product: Scalar and vector product of three and four vectors	Chalk Board	19-09-17		5.90	
38	M5	L11.3	Vector differentiation,Gradient of scalar point function	Chalk Board	20-09-17		5.9,5.10,5.11	

Sr.No	Module No.	Lesson No.	Topics Planned	Teaching Aids Required	Planned Date	Completed Date	Recourse Book Reference	Remark
39	M5	L11.4	Divergence of vector point function	Chalk Board	21-09-17		5.12	
40	M5	L12.1	Curl of vector point function	Chalk Board	25-09-17		5.12	
41	M6	L12.2	Properties of Solenoidal & irrotational vector fields	Chalk Board	26-09-17		5.13	
42	M6	L12.3	Properties of Conservative vector fields	Chalk Board	27-09-17		5.13	
43	M6	L13.1	Vector Integral : Line integral	Chalk Board	03-10-17		6.90	
44	M6	L13.2	Problems continued on Line Integral	Chalk Board	04-10-17		6.90	
45	M6	L13.3	Evaluate Integral by Green's theorem in a plane	Chalk Board	05-10-17		6.10	
46	M6	L14.1	Problems continued on Green's theorem	Chalk Board	12-10-17		6.10	
47	M6	L14.2	Use Gauss' divergence theorem to evaluate the integral	Chalk Board	13-10-17		6.11	
48	M6	L15.1	Use Stoke's theorem to evaluate the integral	Chalk Board	16-10-17		6.12	

Remark:	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 system of differential equations and simultaneous differential equations.
Course:			
No. of (lectures planned)/(lecture taken): 48			
Advanced course: 1. Advanced Engineering Mathematics 2. Regression Analysis 3. Integral Transforms	20 Hours	Online NPTEL videos /courses	**Web sources:** NPTEL-https://onlinecourses.nptel.ac.in **Textbook reference:** Advanced Engineering Mathematics

Text Books:

1.H.K. Das, "Advanced engineering mathematics", S . Chand, 2008
2.A. Datta, "Mathematical Methods in Science and Engineering", 2012 **3.**
B.S. Grewal, "Higher Engineering Mathematics", Khanna Publication

Reference Books:.

1. B. V. Ramana, "Higher Engineering Mathematics", Tata Mc-Graw Hill Publication
2. Wylie and Barret, "Advanced Engineering Mathematics", Tata Mc-Graw Hill 6th Edition
3. Erwin Kreysizg, "Advanced Engineering Mathematics", John Wiley & Sons, Inc
4. Murry R. Spieget, "Vector Analysis", Schaum's outline series, Mc-Graw Hill Publication

Digital Reference:

3.1 www.nptel.ac.in

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 52 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.