



TCET
DEPARTMENT OF ELECTRONICS ENGINEERING (ETRX)
 Credit Based Grading Scheme(Revised - 2012) - University of Mumbai
CBGS-2012[R]



TCET/FRM/IP-02/09
 Semester: V

Semester Plan
 (Theory)

Revision: A
 Course: ETRX
 Class: TE ETRX

Subject: EXC- 504:Signals and Systems

S.No.	Prerequisite/ Bridge course:	Duration (Week /Hrs)	Modes of Learning	Recommended Sources
1	FEC101:Applied mathematics-I FEC201:Applied mathematics-II EXS 301:Applied mathematics-III EXC 304:Circuit Theory EXS 401:Applied mathematics-IV	6 hours	Self Learning/ Revision	Textbooks: 1. Alan V. Oppenheim, Alan S. Willsky, and S. Hamid Nawab, "Signals and Systems", 2nd Edition, PHI learning, 2010. 2. Tarun Kumar Rawat, "Signals and Systems", Oxford University Press 2010. 3. John Proakis and Dimitris Monolakis, "Digital Signal

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	Module 1	L1.1	Chapter 1: Continuous And Discrete Time Signals And Systems- Introduction, Mathematical representation	Power point presentation, Chalk & Board	07-10-2017	1.9.1-7	
2	All	L1.2	Outcome Based Education	Black Board & Chalk, Power point presentation	07-11-2017	All	
3	Module 1	L1.3	classification of CT and DT signals, arithmetic operations on the signals	Black Board & Chalk, Power point presentation	13/7/2017	1.9.2,3-9	
4	Module 1	L2.1	Examples	Chalk & Board, Animation	17/7/2017	1.9.3-9	
5	Module 1	L2.2	transformation of independent variable	Chalk & Board, Animation	20/7/2017	1.9.6-25	
6	Module 1	L3.1	Mathematical representation, classification of CT and DT systems	Black Board & Chalk, Power point presentation	25/7/2017	1.9.4-13	
7	Module 1	L3.2	Examples and Practice session	Black Board & Chalk, Power point presentation	25/7/2017	1.9.5-16	
8	Module 1	L3.3	Sampling and reconstruction	Black Board & Chalk, Power point presentation	27/7/2017	1.9.7-47	
9	Module 1	L4.1	Aliasing effect	Black Board & Chalk, Power point presentation	08-01-2017	1.9.8-48	
10	Module 2	L4.2	Chapter 2: Time Domain Analysis Of Continuous and Discrete Signals And Systems-Properties of LTI	Black Board & Chalk, Power point presentation	08-01-2017	2.9.1-57	
11	Module 2	L4.3	Use of convolution integral and convolution sum for analysis of LTI systems.	Chalk & Board, Animation	08-03-2017	2.9.2-58	

12	Module 2	L5.1	Use of convolution integral and convolution sum for analysis of LTI systems(contd.)	Black Board & Chalk, Power point presentation	08-08-2017	2.9.2-58	
13	Module 2	L5.2	Numerical session	Power point presentation, Chalk & Board	08-10-2017	2.9.2-58	
14	Module 2	L7.1	Properties of convolution integral/sum.	Chalk & Board, Animation	24/8/2017	2.9.3,5-58,65	
15	Module 2	L8.1	Practice Session	Chalk & Board, Animation	31/8/2017	2.9.4,6-60,83	
16	Module 3	L1.1	Chapter 3: Frequency Domain Analysis of Continuous Time System Using Laplace Transform : Need of Laplace	Black Board & Chalk, Power point presentation	07-11-2017	M3.9.1-100	
17	Module 3	L2.1	Inverse of Laplace transform	Chalk & Board, Animation	18/7/2017	M3.9.1-100	
18	Module 3	L2.2	Concept of ROC, poles and zeros	Black Board & Chalk, Power point presentation	20/7/2017	M3.9.2, M3.9.3,M3.9.4:101	tut
19	Module 3	L2.3	Unilateral Laplace transform	Black Board & Chalk, Power point presentation	21/7/2017	3.9:81-103	
20	Module 3	L2.4	Analysis and characterization of LTI system using Laplace transform: impulse and step	Black Board & Chalk, Power point presentation	21/7/2017	M3.9.5-103	
21	Module 3	L3.1	Analysis contd.	Black Board & Chalk, Power point presentation	24/7/2017	M3.9.7, M3.9.12-105,111	
22	Module 3	L3.2	Block diagram representation	Chalk & Board, Animation	26/7/2017	M3.9.13-111	
23	Module 4	L4.1	Chapter 4 : Frequency Domain Analysis of Discrete Time System Using Z Transform : Need of Z transform, definition	Black Board & Chalk,	31/7/2017	M4.9.1, M4.9.2:132	
24	Module 4	L4.2	properties of unilateral and bilateral Z Transform	Black Board & Chalk,	08-04-2017	M4.9.1, M4.9.2:132	
25	Module 4	L5.1	mapping with s plane, relationship with Laplace transform	Black Board & Chalk, Power point presentation	08-07-2017	M4.9.10:172	
26	Module 3, 4	L5.2	Practice Session	Black Board & Chalk, Power point presentation	08-08-2017	M3,4	
27	Module 4	L5.3	Z transform of standard signals	Black Board & Chalk, Power point presentation	08-11-2017	M4.9.6, M4.9.7:151	
28	Module 4	L6.1	ROC, poles and zeros of transfer function	Black Board & Chalk, Power point presentation	14/8/2017	M4.9.4:136	
29	Module 4	L6.2	inverse Z transform	Black Board & Chalk, Power point presentation	18/8/2017	M4.9.7:158	
30	Module 4	L8.1	inverse Z transform Sort	Chalk & Board, Animation	09-01-2017	M4.9.7:158	

31	Module 4	L9.1	Analysis and characterization of LTI system using Z transform: impulse and step response, causality, stability, stability	Black Board & Chalk, Power point presentation	09-04-2017	M4.9.11:151-1173	
32	Module 4	L9.2	Analysis contd.	Black Board & Chalk, Power point presentation	09-08-2017	M4.9.11:151-158	
33	Module 4	L10.1	Block diagram representation, system realization	Chalk & Board, Animation	09-11-2017	M4.9.11:173	
34	Module 4	L11.1	Practice session	Black Board & Chalk, Power point presentation	18/9/2017	M4.9.6, M4.9.7	
34	Module 4	L11.2	Practice session	Power point presentation, Chalk & Board	19/9/2017	M4.9.6, M4.9.7	
35	Module 4	L11.3	Practice session	Black Board & Chalk, Power point presentation	22/9/2017	M4.9.6, M4.9.7:151	
36	Module 5	L9.1	Chapter 5: Frequency Domain Analysis of Continuous and Discrete Signals: Review of Fourier series	Black Board & Chalk, Power point presentation	09-07-2017	5.9.1-214	
37	Module 5	L10.1	Discrete time Fourier series	Black Board & Chalk, Power point presentation	09-12-2017	5.9.1-214	
38	Module 5	L10.2	Discrete time Fourier series properties	Black Board & Chalk, Power point presentation	09-12-2017	5.9.1-214	
39	Module 5	L10.3	Fourier transform, properties of Fourier transform	Black Board & Chalk, Power point presentation	14/9/2017	5.9.2-226	
40	Module 5	L11.1	relationship with Laplace and Z transform	Chalk, Power point presentation	19/9/2017	5.9.10-307	
41	Module 5	L11.2	Discrete time Fourier transform	Power point presentation, Chalk & Board	21/9/2017	5.9.9-285	
42	Module 5	L12.1	Discrete time Fourier transform properties	Black Board & Chalk, Power point presentation	26/9/2017	5.9.9-285	
43	Module 5	L12.2	frequency sampling	Black Board & Chalk, Power point presentation	26/9/2017	5.9.9-285	
44	Module 5	L13.1	Discrete Fourier transform, properties	Chalk & Board, Animation	10-03-2017	5.9.9-285	
45	Module 5	L13.2	Practice session	Black Board & Chalk, Power point presentation	10-05-2017	5.9.3,4-227,235	
46	Module 6	L12.1	Chapter 6: Correlation and Spectral Density :Comparison of convolution	Black Board & Chalk, Power point presentation	25/9/17	M6.9.1:314	
47	Module 6	L13.1	Auto and cross correlation, energy/power spectral density	Black Board & Chalk, Power point presentation	10-02-2017	M6.9.2,M6.9.6,M6.9.7:315,319	
48	Module 6	L13.2	Relation of ESD, PSD with auto-correlation	Chalk, Power point presentation	10-03-2017	M6.9.2,M6.9.6,M6.9.7:315,319	
49	Module 6	L14.1	Relationship between ESD/PSD of input and output of LTI system	Black Board & Chalk, Power point presentation	10-06-2017	M6.9.2,M6.9.6,M6.9.7	
50	Module 6	L14.2	Practice Session	Black Board & Chalk, Power point presentation	13/10/2017	M6	
51		L15.1	University paper solving	Chalk, Power point presentation	16/10/2017	All	
52		L15.2	University paper solving	Black Board & Chalk, Power point presentation	20/10/17	All	
53		L14.1	University paper solving	Black Board & Chalk, Power point presentation	10-12-2017	All	
54		L15.1	University paper solving	Black Board & Chalk, Power point presentation	17/10/2017	All	

Remark:	Syllabus Coverage:	Practice Session: 2	Content Beyond Syllabus:Filtering techniques,DFT,FFT,STFT
Course:			
No. of (lectures planned)/(lecture taken): 52/			

Advanced course:	20 Hours	Online NPTEL videos	Web sources: 1. NPTEL- https://onlinecourses.nptel.ac.in 2. www.tutorialpoint.com - Instructor's study material, Textbook reference: Digital Image Processing by Rafael C Gonzalez & Richard E Woods, 3rd
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Textbooks:

1. Alan V. Oppenheim, Alan S. Willsky, and S. Hamid Nawab, "Signals and Systems", 2nd Edition, PHI learning, 2010.
 2. Tarun Kumar Rawat, "Signals and Systems", Oxford University Press 2010.
 3. John Proakis and Dimitris Monolakis, "Digital Signal Processing", Pearson Publication, 4th Edition
- Reference Books:
1. John Proakis and Dimitris Monolakis, "Digital Signal Processing", Pearson Publication, 4th Edition.

Digital Reference:

- 3.1 http://nptel.ac.in/keyword_search_result.php?word=Fourier+transforms
- 3.2 <https://www.youtube.com/watch?v=wG6VUnkrO90>
- 3.3 https://www.youtube.com/watch?v=CZetNvqQx_w

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.