#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037
T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

DEPARTMENT OF TELECOMMUNICATION

SEMESTER	: 1st M.TECH	NAME OF THE FACULTY	: RAHUL NYAMANGOUDAR
BRANCH	: TCE	DATE OF COMMENCEMENT	: 26/09 /2016
SUBJECT	: ADC	DATE OF CLOSING	: 17/12 /2016
SUB CODE	: 16ECS14	CLASS STRENGTH	: 5
NO. OF HRS/WK	: 5	TOTAL HRS	: 65

Session No.	Chapter no (No. of hrs. planed for chapter)	Date	Topics planned for the session	Teaching Aids	Assignments / Tests planned for the chapter	Topics covered As per plan
1	0-1		Pre-requisites – Digital Communication Basics, Probability Basics	Board, chalk, duster		
2	0-2		Pre-requisite- Gram-Schmidt Orthogonalization Procedure	,,		
3	0-3		Pre-requisite- Gram-Schmidt Orthogonalization Procedure	,,		
4	1-1		Representation of Digitally Modulated Signals	,,		
5	1-2		Memory less Modulation Methods – Pulse Amplitude Modulation	,,		
6	1-3		Phase Modulation	,,		
7	1-4		Phase Modulation	,,		
8	1-5		Quadrature Amplitude Modulation	,,		
9	1-6		Multidimensional Signalling	,,		
10	1-7		Signalling Schemes with memory: CPFSK	Projector, Board, chalk, duster		
11	1-8		CPM, MSK, OQPSK	,,	Assignment-1	
12	1-9		Transmit PSD for Modulation Schemes	,,		
13	1-10		Transmit PSD for Modulation Schemes	,,		

14	1-11		Problems	Board, chalk, duster		
15	2-1		Optimal Detection for a General Vector Channel	,,		
16	2-2		Optimal Detection for a General Vector Channel	,,		
17	2-3		Waveform and Vector AWGN Channels	,,		
18	2-4		Optimal Detection for the Vector AWGN Channel	,,		
19	2-5		Implementation of the Optimal Receiver for AWGN Channels	,,		
20	2-6		Optimal Detection and Error Probability for ASK or PAM Signaling	,,		
21	2-7		Optimal Detection and Error Probability for PSK Signaling	,,		
22	2-8		Optimal Detection and Error Probability for QAM Signaling	,,	Assignment-2	
23	2-9		Demodulation and Detection	,,		
24	2-10		Optimal Detection and Error Probability for Orthogonal Signaling	,,		
25	2-11		Optimal Detection and Error Probability for Biorthogonal Signaling	,,		
26	2-12		Optimal Detection and Error Probability for Simplex Signaling	,,		
27	2-13		Noncoherent Detection of Carrier Modulated Signals	,,		
28	2-14		Optimal Noncoherent Detection of FSK Modulated Signals	,,		
29	2-15		Differential PSK (DPSK)	,,		
30	2-16		Problems	,,	Assignment-3	
31	3-1		The Likelihood Function	,,		
32	3-2		Carrier Recovery and Symbol Synchronization in Signal Demodulation	,,		
33	3-3		Carrier Phase Estimation: Maximum-Likelihood Carrier Phase Estimation	,,		
34	3-4		The Phase-Locked Loop	,,		
35	3-5		Effect of Additive Noise on the Phase Estimate	,,		

36	3-6		Decision-Directed Loops	Board, chalk, duster		
37	3-7		Non-Decision-Directed Loops	,,		
38	3-8		Symbol Timing Estimation: Maximum-Likelihood Timing Estimation	,,		
39	3-9		Non-Decision-Directed Timing Estimation	,,	Assignment-4	
40	4-1		Characterization of Band-Limited Channels	,,		
41	4-2		Optimum Receiver for Channels with ISI and AWGN: Optimum Maximum-Likelihood Receiver	,,		
42	4-3		A Discrete-Time Model for a Channel with ISI	,,		
43	4-4		Linear Equalization: Peak Distortion Criterion	,,		
44	4-5		Mean-Square-Error (MSE) Criterion	,,		
45	4-6		Fractionally Spaced Equalizers	,,		
46	4-7		Baseband and Passband Linear Equalizers	,,		
47	4-8		Decision-Feedback Equalization: Coefficient Optimization	,,		
48	4-9		Predictive Decision-Feedback Equalizer	,,	Assignment-5	
49	5-1		Adaptive Linear Equalizer: The Zero-Forcing Algorithm, The LMS Algorithm, Convergence Properties of the LMS Algorithm	,,		
50	5-2		Excess MSE due to Noisy Gradient Estimates, Accelerating the Initial Convergence Rate in the LMS Algorithm, Adaptive Fractionally Spaced Equalizer—The Tap Leakage Algorithm, An Adaptive Channel Estimator for ML Sequence Detection	,,		
51	5-3		Adaptive Decision-Feedback Equalizer	,,		
52	5-4		Adaptive Equalization of Trellis-Coded Signals	,,	Assignment-6	
53	6-1		Model of Spread Spectrum Digital Communication System	Projector, Board, chalk, duster		

54	6-2		Direct Sequence Spread Spectrum Signals	Projector, Board, chalk, duster		
55	6-3		Error Rate Performance of the Decoder, Some Applications of DS Spread Spectrum Signals	,,		
56	6-4		Effect of Pulsed Interference on DS Spread Spectrum Systems	,,		
57	6-5		Excision of Narrowband Interference in DS Spread Spectrum Systems, Generation of PN Sequences	,,		
58	6-6		Frequency-Hopped Spread Spectrum Signals: Performance of FH Spread Spectrum Signals in an AWGN Channel	,,	Assignment-7	
59	6-7		Performance of FH Spread Spectrum Signals in Partial-Band Interference	,,		
60	6-8		A CDMA System Based on FH Spread Spectrum Signals	,,		
61	6-9		Other Types of Spread Spectrum Signals	,,		
62	6-10		Synchronization of Spread Spectrum Systems	,,		
63	6-11		Problems	,,		
64	6-12		Problems	,,		
65	6-13		Problems	,,	Assignment-8	

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CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Electronics and Communication Engineering

SEMESTER :I
BRANCH : ECE
SUBJECT : AESD
SUBJECT CODE : 16EVE13
NO OF HRS/WK : 4

NAME OF THE FACULTY : Mr. Mahesh S Gour
DATE OF COMMENCEMENT : 26.09.2016
DATE OF CLOSING : 20.12.2016
CLASS STRENGTH : 7
TOTAL HRS : 50

S.No	Chapter no (No of hrs planed for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	**1/1**	26/9/16	**module –1** **Embedded System**: Embedded vs General computing system, classification, application and purpose of ES. Core of an Embedded System, Memory, Sensors	Board, chalk, Duster	Prerequisite	
2	**2/1**	26/9/16	Actuators, LED, Opto coupler, Communication Interface	,,		
3	**3/1**	27/9/16	Reset circuits, RTC, WDT,	,,		
4	**4/1**	28/9/16	Characteristics and Quality Attributes of Embedded Systems Approaches	,,	Assignment - I	

5	**5/1**	29/9/16	Characteristics and Quality Attributes of Embedded Systems (contd..)	,,		
6	**6/1**	30/9/16	- Characteristics and Quality Attributes of Embedded Systems(contd..)	,,		
7	½	1/10/16	**module –2** Hardware Software Co-Design, embedded firmware design approaches, computational models			
8	**2/2**	3/10/16	embedded firmware development languages,	,,		
9	**3/2**	4/10/16	Integration and testing of Embedded Hardware and firmware	Board, chalk, Duster		
10	**4/2**	5/10/16	Components in embedded system development environment (IDE),	,,	Assignment -II	
11	**5/2**	6/10/16	files generated during compilation	,,		
12	**6/2**	11/10/16	simulators, emulators and debugging	,,		
13	**1/3**	12/10/16	**Module –3** **ARM-32 bit Microcontroller**: Thumb-2 technology	,,		
15	**2/3**	15/10/16	applications of ARM, Architecture of ARM Cortex M3			
16	**3/3**	15/10/16	Various Units in the architecture,	,,		
17	**4/3**	19/10/16	Various Units in the architecture(contd..)	Board, chalk, Duster		

18	**5/3**	20/10/16	General Purpose Registers, Special Registers	,,	Assignment –III	
19	**6/3**	2/11/16	General Purpose Registers, Special Registers(cond..)	,,		
20	**7/3**	3/11/16	exceptions, interrupts, stack operation, reset sequence	,,		
21	**¼**	5/11/16	**MODULE –4** **Instruction Sets**: Assembly basics, Instruction list	,,		
22	**2/4**	6/11/16	Assembly basics, Instruction list(contd..)	,,		
23	**¾**	10/11/16	description, useful instructions			
24	**4/4**	12/11/16	Memory Systems, Memory maps	,,	Assignmnt –IV	
25	**5/4**	15/11/16	Memory Systems, Memory maps (contd..)	,,		
26	**6/4**	17/11/16	Cortex M3 implementation overview	,,		
27	**7/4**	19/11/16	pipeline and bus interface	,,		
28	**8/4**	25/11/16	pipeline and bus interface (contd..)	Board, chalk, Duster		
29	**1/5**	27/11/16	**Module –5** Exceptions	,,	Assignment -V	
30	**2/5**	2/12/16	Nested Vector interrupt controller design,	,,		
31	**3/5**	5/12/16	Systick Timer			
32	**4/5**	8/12/16	Cortex-M3 Programming using assembly			
33	**5/5**	9/12/16	Cortex-M3 Programming using assembly and C language			
34	**6/5**	10/12/16	CMSIS	,,		

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CMR Institute of Technology, Bangalore		
Department: Telecommunication Engineering		
Semester: 01		
Antenna Theory and Design	16ECS12	Lectures/week: 6
Course Instructor: Mr. Varuna A.B		
Course duration: 25th Sep, 2016 – 21st Dec, 2016		

LESSON PLAN

Lecture	Sections	Topic	Dates	
			From	To
1-2	**Prerequisites** (2 Hrs)	Overview of the Radiation mechanism, Why study antennas	25-09-2016	25-09-2016
3-12	**Module – 1** (6 Hrs)	**Antenna fundamental and definitions**: Radiation mechanism - overview, EM fundamentals, Solution of Maxwell's equations for radiation Problems, Ideal dipole, Radiation patterns, Directivity and gain, Antenna impedance, Radiation efficiency, Antenna polarization.	26-09-2016	10-10-2016
12-24	**Module – 1** (6 Hrs)	**Arrays**: Array factor for linear arrays, Uniformly excited equally spaced linear arrays, Pattern multiplication, Directivity of linear arrays, Non-uniformly excited equally spaced linear arrays, Mutual coupling. **Antenna Synthesis**: Formulation of the synthesis problem, Synthesis principles, Line sources shaped beam synthesis, Linear array shaped beam synthesis, Fourier series, Woodward - Lawson sampling method, Comparison of shaped beam synthesis methods, low side lobe narrow main beam synthesis methods, Dolph Chebyshev linear array, Taylor line source method.	10-10-2016	30-10-2016
25-35	**Module – 1** (6 Hrs)	**Resonant Antennas**: Wires and patches, Dipole antenna, Yagi-Uda antennas, Microstrip antenna. **Broadband antennas**: Travelling wave antennas Helical antennas, Biconical antennas Sleeve antennas, and Principles of frequency independent antennas, Spiral antennas, and Log - periodic antennas.	30-10-2016	15-11-2016

35-48	**Module – 1** (6 Hrs)	**Aperture antennas**: Techniques for evaluating gain, Reflector antennas - Parabolic reflector antenna principles, Axi-symmetric parabolic reflector antenna, Offset parabolic reflectors, Dual reflector antennas, Gain calculations for reflector antennas, Feed antennas for reflectors, FiECS representations, Matching the feed to the reflector, General feed model, Feed antennas used in practice.	15-11-2016	03-12-2016
49-60	**Module – 1** (6 Hrs)	**CEM for antennas**: The method of moments: Introduction of the methods moments, Pocklington's integral equation, Integral equation and Kirchhoff's networking equations, Source modeling weighted residual formulations and computational consideration, Calculation of antenna and scatter characteristics.	03-12-2016	20-12-2016

Literature:

Book Type	Code	Author & Title	Edition & Publisher
Reference Books	RB1	**C. A. Balanis, "Antenna Theory Analysis and Design"**	John Wiley, 2nd edition, 1997
	RB2	**J. D. Kraus, "Antennas"**	McGraw Hill TMH, 3rd/4th edition
	RB3	**Stutman and Thiele, "Antenna theory and design"**	2nd edition John Wiley and sons Inc
	RB4	**Sachidnanda et al, "Antennas and propagation"**	Pearson Education.

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CMR INSTITUTE OF TECHNOLOGY

Session-wise Course Plan

Department of Telecommunication

SEMESTER : I
BRANCH : TCE
SUBJECT : OCN
SUBJECT CODE : 14ECS24
NO OF HRS/WK : 5

NAME OF THE FACULTY : Dr. S. K. Routray
DATE OF COMMENCEMENT : 3.10.2016
DATE OF CLOSING : 24.12.2016
CLASS STRENGTH : 06
TOTAL HRS : 52

Session No	Chapter no (No of hrs planed for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	**1/1**	3.10.16	Unit-1-INTRODUCTION TO OPTICAL NETWORKS**:**	Board, chalk, duster		
2	**2/1**	4.10.16	Telecommunication networks,	,,		
3	**3/1**	5.10.16	First generation optical networks,	,,		
4	**4/1**	6.10.16	Multiplexing techniques, Second-generation optical networks,	,,		
5	**5/1**	7.10.16	System and network evolution. Non-linear effects SPM	,,		
6	**6/1**	8.10.16	CPM, four wave mixing, Solutions.	,,		
7	**1/2**	17.10.16	Unit -**2**COMPONENTS**:**	,,	Assignment- I	
8	**2/2**	18.10.16	Working of Couplers 3 and 4 port couplers	Board, chalk, duster		
9	**3/2**	19.10.16	Isolators and Circulators	,,		
10	**4/2**	20.10.16	Working of an isolators and Circulators	,,		
11	**5/2**	21.10.16	Working of wave length Multiplexes	,,		
12	**6/2**	22.10.16	Filters and Optical amplifiers.	,,		
13	**7/2**	22.10.16	Working of an Optical amplifiers.	,,	Assignment -II	
14	**1/3**	23.10.16	Unit –3 **Introduction**	,,		
15	**2/3**	24.10.16	Transmitters,			

16	**3/3**	26.10.16	Working principle of transmitters			
17	**4/3**	28.10.16	Working principle of detector			
18	**5/3**	2.11.16	Switches	,,		
19	**6/3**	2.11.16	Wavelength converters.	,,	Assignment –III	
20	**7/3**	3.11.16	Problems and solutions	,,		
21	**1/4**	5.11.16	Unit-4 TRANSMISSION SYSTEM ENGINEERING**:**	,,		
22	**2/4**	8.11.16	System model,	,,		
23	**3/4**	9.11.16	Power penalty			
24	**4/4**	10.11.16	Transmitter, receiver	Board, chalk, duster		
25	**5/4**	11.11.16	optical amplifiers, Crosstalk	,,		
26	**6/4**	12.11.16	Dispersion, Overall design Consideration	,,		
27	**1/5**	21.11.16	Unit 5- First generation networks SONET/SDH	,,	Assignment –IV	
28	**2/5**	22.11.16	Computer interconnects	,,		
29	**3/5**	23.11.16	Mans,	,,		
30	**4/5**	24.11.16	Layered architecture for SONET	,,		
31	**5/5**	25.11.16	Second generation networks	,,		
32	**6/5**	26.11.16	Problems and solutions	,,		
33	**1/6**	28.11.16	Unit-6 WAVELENGTH ROUTING NETWORKS	Board, chalk, duster	Assignment -V	
34	**2/6**	29.11.16	Optical layer	,,		
35	**3/6**	30.11.16	Node design	,,		
36	**4/6**	1.12.16	Network design and operation,	,,		
37	**5/6**	2.12.16	routing and wavelength	,,		
38	**6/6**	3.12.16	Assignment architectural variations.	,,		

39	**7/6**	5.12.16	Problems and solutions	,,		
40	**1/7**	6.12.16	Unit-7 VIRTUAL TOPOLOGY DESIGN:	,,		
41	**2/7**	7.12.16	Virtual topology design problem	,,		
42	**3/7**	8.12.16	Combines SONET/WDM network design,	,,		
43	**4/7**	9.12.16	an ILP formulation, Regular virtual	,,		
44	**5/7**	10.12.16	Control and management, Network management configuration management	,,		
45	**6/7**	13.12.16	Performance management, fault management.	,,		
46	**1/8**	13.12.16	Unit-8 ACCESS NETWORKS:	,,		
47	**2/8**	14.12.16	Network architecture overview, present and future access networks	,,		
48	**3/8**	15.12.16	HFC, FTTC,	,,		
49	**4/8**	16.12.16	Optical access networks Deployment	Board, chalk, duster		
50	**5/8**	17.12.16	Photonic packet switching	,,		
51	**6/8**	19.12.16	OTDM, Multiplexing and demultiplexing	,,		
52	**7/8**	20.12.16	Synchronisation.	,,		
53		21.12.16	Revision of Unit -1	,,		
54		22.12.16	Revision of Unit – 2	,,		
55		23.12.16	Revision of Unit –3	,,		
56		23.12.16	Revision of Unit –4	,,		
57		23.12.16	Revision of Unit –5	,,		
58		24.12.16	Revision of Unit –6	,,		
59		24.12.16	Revision of Unit –7	,,		
60		24.12.16	Revision of Unit -8	,,		

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CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Telecommunication Engineering

SEMESTER : I
BRANCH : TCE
SUBJECT : ADM
SUBJECT CODE: 16ELD11
NO OF HRS/WK: 5

NAME OF THE FACULTY : Rajesh Gopal
DATE OF COMMENCEMENT : 15.10/2016
DATE OF CLOSING : 15.12/.2016
CLASS STRENGTH : 08
TOTAL HRS : 52

Session No	Chapter no (No of hrs planed for the module)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	**1/(10 hrs)**	15/10/16 To 30/10/16	**Module 1: Linear Algebra-I, Vector spaces, sub-space, linearly independent vectors, basis vectors, dimension of vector space, linear transformation, rank-nullity theorem, matrix form of linear transformation**	Board, chalk, duster		
2	**2/(10 hrs)**	1/11/16 To 15/11/16	Module2 : Probability Theory Review of basic theory, definition of random variables, probability distribution, probability mass and density function, expectation, moments, central moments, characteristic functions, probability generating and moment generating functions, Binomial, Poisson, Exponential, Gaussian and Rayleigh distribution	,,		
3	**3/(10 hrs)**	16/11/16 To 27/11/16	Module 3-Joint Probability distributions, Properties of CDF, PDF, PMF, conditional distributions, Expectation, covariance and correlation, Independent random variables, Central limit theorem, Random process, Stationary and Ergodic, Auto correlation function, properties, Gaussiam random process			
4	**4 /(10 hrs)**	28/11/16 To 7/12/16	Module 4 : Linear Algebra II, Eigen values and Eigenvectors of real symmetric matrices, Given's method, orthogonal	,,		

			vectors and bases, Gram-Schmidt orthogonalization, QR decomposition, Singular value decomposition, least square approximations.			
5	**5/(10 hrs)**	8/12/16 To 15/12/16	Module 5: Calculus of variations, Concept of functional- Eulers equation, functional dependent on first and higher order derivatives, functional on several dependent variables. Isoperimetric problems- variation problems with moving boundaries	,,		

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