

Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electronics and Communication Engineering

Lesson plan of faculty member for the academic year 2017–18

Class: IV B Tech

Branch: ECE

Semester: II

Subject: Satellite Communications

Lectures per week: 3+1 (Tutorial)

Lecture Number	Topic to be covered	Date(s)
UNIT-I : Communication Satellite		
1.	Tutorial (G1,G2,G3) - Introduction to Satellite Communication, History	21,22,23December 2017
2.	Indian Satellites and launch pads available world wide	22 December 2017
3.	Satellite frequency bands, Applications	23 December 2017
4.	Satellite systems	23 December 2017
5.	Tutorial (G1, G2, G3) – Review on previous topics	28,29,30 December 2017
6.	Orbital Period and Velocity, effects of Orbital inclination	29 December 2017
7.	Azimuth and Elevation angles	30 December 2017
8.	Coverage angle and slant range, Eclipse	30 December 2017
9.	Tutorial (G1, G2, G3) - Problems on Orbital mechanics and look angles	4,5,6 January 2018
10.	Orbital perturbations, Placement of satellite in GEO	5 January 2018
UNIT-II : Satellite Sub-Systems		
11.	Attitude and Orbit Control Systems (AOCS)	6 January 2018
12.	Telemetry, Tracking and Control (TTC) Subsystem	6 January 2018
13.	Tutorial (G1, G2, G3)- Problems on AOCS, TTC & M	11,12,13 January 2018
14.	Power System, Communication Subsystem, Satellite antenna equipment	12 January 2018
15.	Basic transmission theory	13January 2018
16.	System Noise Temperature and G/T Ratio	13 January 2018
17.	Tutorial(G1, G2, G3) - Problems on G/T ratio	18,19,20 January 2018
18.	Basic link analysis	19 January 2018
19.	Interference analysis	20 January 2018
20.	Design of satellite link for specified C/N	20 January 2018
21.	Tutorial(G1,G3) - Problems on G/T and C/N ratios and up and down links	25,27January 2018
22.	Link budget	27 January 2018
UNIT-III: Propagation effects		
23.	Atmospheric Absorption, Cloud Attenuation	27 January 2018
24.	Tutorial(G1, G2, G3) - Problems on all interferences	1 February 2018
25.	Tropospheric and Ionospheric Scintillation	2 February 2018
26.	Low angle fading. Rain attenuation	3 February 2018
27.	Rain induced cross polarization interference	3 February 2018
28.	Frequency Division Multiple Access (FDMA)	10 February 2018
29.	Intermodulation , Calculation of C/N	10 February 2018
30.	Tutorial(G3) - Problems on all interferences	10 February 2018
31.	Tutorial(G1,G2,G3) - Problems on all interferences	15,16,17 February 2018
32.	Time Division Multiple Access (TDMA)	16 February 2018
33.	Frame and Burst Structure	17 February 2018
34.	Satellite Switched TDMA and On board Processing	17 February 2018
35.	Tutorial (G1, G2,G3) - Problems on TDMA,FDMA	22 February 2018
36.	Demand Assignment Multiple Access (DAMA) ,types of assignment and characteristics	23 February 2018
37.	Code Division Multiple Access (CDMA)	24 February 2018
38.	Spread Spectrum transmission and reception	24 February 2018

UNIT IV: Earth Station Technology		
39.	Introduction and Transmitters, Receivers, Antennas	2 March 2018
40.	Tutorial (G2, G3) - Problems on antennas	2,3 March 2018
41.	Tracking Systems and Terrestrial Interface	3 March 2018
42.	Power test methods and lower orbit considerations	3 March 2018
43.	Tutorial (G1,G2, G3) - Problems on antennas	8,9,10 March 2018
44.	Radio and satellite Navigation	9 March 2018
45.	GPS Position location Principles	10 March 2018
46.	GPS Receivers	10 March 2018
47.	Tutorial (G3,G2,G1) - Problems on GPS	15,16,17 March 2018
48.	GPS C/A code accuracy,	16 March 2018
49.	Differential GPS	17 March 2018
UNIT V: Satellite Packet Communications		
50.	Message Transmission by FDMA	17 March 2018
51.	Tutorial (G1,G2,G3) - Problems on GPS errors	22,23,24 March 2018
52.	M/G/1 Queue	23 March 2018
53.	Message Transmission by TDMA	24 March 2018
54.	PURE ALOHA	24 March 2018
55.	Tutorial (G1,G3) - Problems on TDMA and FDMA	29,31 March 2018
56.	SLOTTED ALOHA	31 March 2018
57.	Packet reservation and Tree algorithm	31 March 2018

TEXT BOOKS:

1. Timothy Pratt, Charles Bostian and Jeremy Allnutt, "Satellite Communications", 2/e, WSE Wiley Publications, 2003.
2. Wilbur L Pritchard, Robert A Nelson and Henri G. Suyderhoud, "Satellite Communications Engineering", 2/e, Pearson Publications, 2003.
3. Tri.T.Ha, "Digital Satellite Communications", 2/e, Mc.Graw Hill, 1990.

Name and signature of the faculty: N.Ritishree ----

Name and signature of Head of the Department: Ms N Shribala (ECE) ----