Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electronics and Communication Engineering

Lesson Plan of faculty members for the academic year 2015 – 2016

Name of the faculty member and Department : RVNR SUNEEL KRISHNA,ECE

Subject: Radar Systems Class: IV B.Tech.

Branch & Section: ECE-A Semester: II

No. of lectures per week: 3+1 (Tutorial)

Lecture Number	Date	Topic to be covered
	UNIT- I	**Basics of Radar**
1.	11/12/15	Introduction, Importance of Radar Systems, Introduction to Radar, Maximum unambiguous range
2.	12/12/15	Radar Wave forms, Simple form of Radar Equation
3.	12/12/15	Radar Block diagram and operation, Radar frequencies and Applications
4.	10/12/15,11/12/15, 12/12/15	Tutorial-Related problems(G1,G3,G2)
5.	18/12/15	Prediction of Range Performance, Minimum detectable signal, Receiver noise
6.	19/12/15	Receiver noise
	UNIT- II	**Radar Equation**
7.	19/12/15	Signal to noise ratio, Integration of Radar pulses, Radar cross section of targets (simple targets)
8.	17/12/15,18/12/15, 19/12/15	Tutorial-Related Problems(G1,G3,G2)
9.	1/01/16	Transmitter power, PRF and Range ambiguities, System losses
	UNIT – III	**CW and Frequency Modulated Radar**
10.	2/01/16	CW Radar, Doppler effect, CW Radar block diagram, Isolation between Transmitter and Receiver
11.	02/01/16	Non-zero IF Receiver, Applications of CW Radar,Receiver Bandwidth requirements
12.	31/12/15,1/01/16 02/01/16	Tutorial-Related Problems(G1,G3,G2)
	UNIT – IV	**FM-CW Radar**
13.	08/01/16	FM-CW Radar Block diagram, Range and Doppler measurements
14.	09/01/16	Block diagram operation and Characteristics(approaching and receding targets)
15.	09/01/16	FM-CW altimeter, Measurement errors, Multiple frequency CW Radar
16.	07/01/16,08/01/16, 09/01/16	Tutorial-Related Problems(G1,G3,G2)
	UNIT – V	**MTI and Pulse Doppler Radar**
17.	16/01/16	MTI and Pulse Doppler Radar, Introduction and principle of operation
18.	16/01/16	MTI Radar with power amplifier transmitter&power oscillator transmitter

19.	14/01/16,.....,16/01/16	Tutorial Related problems(G1,G2)
20.	22/01/16	Delay line cancellers and filter characteristics
21.	23/01/16	Blind speeds, Double cancellation, Staggered PRF's
22.	23/01/16	Range gated Doppler filters
23.	21/01/16,22/01/16, 23/01/16	Tutorial-Related Problems(G1,G3,G2)
24.	29/01/16	MTI Radar parameters
25.	30/01/16	Limitations to MTI performance
26.	30/01/16	MTI versus Pulse Doppler radar
27.	28/01/16,29/01/16, 30/01/16	Tutorial-Related Problems(G1,G3,G2)
	UNIT – VI	**Tracking Radar**
28.	26/02/16	Tracking with radar
29.	27/02/16	Sequential lobing
30.	27/02/16	Conical scan
31.	25/02/16,26/02/16 27/02/16	Tutorial-Related Problems(G1,G3,G2)
32.	04/03/16	Amplitude comparison monopulse (one and two co-ordinates)
33.	05/03/16	Phase comparison Monopulse, Target reflection characteristics and angular accuracy
34.	05/03/16	Tracking in Range
35.	03/03/16,04/03/16, 05/03/16	Tutorial-Related Problems(G1,G3,G2)
36.	11/03/16	Acquisition and scanning patterns, Comparison of Trackers
	UNIT – VII	**Detection of Radar signals in Noise**
37.	12/03/16	Introduction to detection of radar signals in noise
38.	12/03/16	Matched filter receiver : Response characteristics and derivation
39.	10/03/16,11/03/16, 12/03/16	Tutorial-Related Problems(G1,G3,G2)
40.	18/03/16	Correlation function and cross correlation receiver
41.	19/03/16	Efficiency of Non-Matched filters
42.	19/03/16	Matched filter with Non-White noise
43.	17/03/16,18/03/16 19/03/16	Tutorial-Related Problems(G1,G3,G2)
	UNIT – VIII	**Radar Receivers**
44.	26/03/16	Noise figure and Noise Temperature,Display-Types
45.	26/03/16	Duplexers : Branch type and Balanced type
46.	24/03/16,25/03/16,	Tutorial-Related Problems(G1,G3,G2)

	26/03/16	
47.	01/04/16	Circulators as Duplexers
48.	02/04/16	Phased array antenna Basic concepts
49.	02/04/16	Radiation pattern
50.	31/03/16,01/04/16, 02/04/16	Tutorial-Related Problems(G1,G3,G2)
51.	09/04/16	Beam steering and beam width changes
52.	9/04/16	Series Versus Parallel feeds,
53.	07/04/16,.....,09/04/16	Tutorial(G1,G2)
54.	16/04/16	Applications, advantages and limitations
55.	16/04/16	Revision
56.	….., ..., 16/04/16	Tutorial(G2)

TEXT BOOK:

1. Introduction to Radar Systems-Merill I.Skolnik, TMH Special Indian Edition, 2nd Ed., 2007(All Units are covered)

REFERENCE BOOKS:

1. Radar: Principles,Technology, Applications-Byron Edde, Pearson Education,2004.
2. Radar Principles-Peebles, Jr.,P.Z.,Wiley,New York, 1998.

Name : Signature of the faculty with date:

HoD Signature: