**LESSON PLAN**

**Branch**: I M.Tech **Semester**: I **Subject** : RSP

**Acadamic year: 2016-17 faculty :Eppili Jaya**

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| --- | --- | --- | --- | --- | --- | --- |
| Period | Date (Tentative) | Topic | Unit No. | Teaching Methodology | Remarks | Corrective Action upon Review |
|  |  | RANGE EQUATION & MATCHED FILTER: | I |  |  |  |
|  | 22.08.2016 | Radar Range Equation, | I | Black Board |  |  |
|  | 23.08.2016 | Radar Detection with Noise Jamming, Beacon and Repeater Equations, | I | B.B |  |  |
|  | 26.08.2016 | Bi - static Radar | I | B.B |  |  |
|  | 29.08.2016 | Matched filter Receiver – Impulse Response, Frequency Response Characteristic and its Derivation, | I | B.B |  |  |
|  | 30.08.2016 | Matched Filter and Correlation Function, | I | B.B |  |  |
|  | 01.09.2016 | Correlation Detection | I | B.B |  |  |
|  | 02.09.2016 | Cross - Correlation Receiver. | I | B.B |  |  |
|  | 06.09.2016 | Efficiency of Non - Matched Filters, |  |  |  |  |
|  | 08.09.2016 | Matched Filter for Non - White Noise. | I | B.B |  |  |
|  | 09.09.2016 | problems | I | B.B |  |  |
|  |  | SIGNAL MODELS: | II |  |  |  |
|  | 13.09.2016 | Introduction |  | B.B |  |  |
|  | 16.09.2016 | Amplitude model, | II | B.B |  |  |
|  | 19.09.2016 | Radar cross section, | II | B.B |  |  |
|  | 20.09.2016 | Statistical description, clutter: Noise model,. | II | B.B |  |  |
|  | 23.09.2016 | Signal to Noise ratio, | II | B.B |  |  |
|  | 26.09.2016 | jamming. Frequency models: | II | B.B |  |  |
|  | 27.09.2016 | Doppler shift, Spatial Models, | II | B.B |  |  |
|  | 29.09.2016 | Variation with angel cross range multipath | II | B.B |  |  |
|  |  | SAMPLING AND QUANTIZATION OF PULSED RADAR SIGNALS: | III |  |  |  |
|  | 30.09.2016 | Introduction | III | B.B |  |  |
|  | 03.10.2016 | Domain criteria for sampling radar signals, | III | B.B |  |  |
|  | 04.10.2016 | sampling in the fast time dimension,. | III | B.B |  |  |
|  | 14.10.2016 | Sampling in slow time, | III | B.B |  |  |
|  | 14.10.2016 | Sampling the Doppler spectrum, | III | B.B |  |  |
|  | 18.10.2016 | spatial dimension, | III | B.B |  |  |
|  | 19.10.2016 | angel dimension, | III | B.B |  |  |
|  | 20.10.2016 | Quantization | III | B.B |  |  |
|  |  | Radar Waveforms: |  |  |  |  |
|  | 21.10.2016 | Waveform Matched filter of moving targets Ambiguity function, | IV | B.B |  |  |
|  | 24.10.2016 | Pulse burst Waveforms. | IV | B.B |  |  |
|  | 25.10.2016 | Frequency Modulated pulse compression wave forms: Introduction, | IV | B.B |  |  |
|  | 26.10.2016 | significance, Types. Linear FM Pulse Compression – Block Diagram, Characteristics reduction of Side Lobes, | IV | B.B |  |  |
|  | 27.10.2016 | Stretch Techniques. Generation and decoding of FM Waveforms | IV | B.B |  |  |
|  | 28.10.2016 | block, schematic and characteristics of passive system, | IV | B.B |  |  |
|  | 31.10.2016 | digital compression. | IV | B.B |  |  |
|  | 01.11.2016 | DOPPLER PROCESSING: | V | B.B |  |  |
|  | 03.11.2016 | Moving Target Indication: | V | B.B |  |  |
|  | 04.11.2016 | Pulse cancellers, | V | B.B |  |  |
|  | 07.11.2016 | matched filters for clutter suppression, | V | B.B |  |  |
|  | 08.11.2016 | blind speeds Pulse Doppler processing: | V | B.B |  |  |
|  | 10.11.2016 | DFT of moving targets, Sampling of DTFT, | V | B.B |  |  |
|  | 11.11.2016 | Fine Doppler estimation. | V | B.B |  |  |
|  | 14.11.2016 | Pulse pair processing. | V | B.B |  |  |
|  | 15.11.2016 | Detection Fundamentals: Neynan – Pearson Detection Rule, | V | B.B |  |  |
|  | 17.11.2016 | Threshold Detection of radar signals. | V | B.B |  |  |
|  | 21.11.2016 | Waveform Analysis, | V | B.B |  |  |
|  | 22.11.2016 | PHASE CODING TECHNIQUES: | VI | B.B |  |  |
| 46 | 24.11.2016 | Principles, | VI | B.B |  |  |
|  |  |  |  |  |  |  |
| 47 | 25.11.2016 | Binary Phase Coding, | VI | B.B |  |  |
| 48 | 25.11.2016 | Barker Codes, | VI | B.B |  |  |
| 49 | 28.11.2016 | Maximal Length Sequences (MLS/LRS/PN), | VI | B.B |  |  |
| 50 | 29.11.2016 | Block Diagram of a Phase Coded CW Radar. | VI | B.B |  |  |
| 51 | 01.12.2016 | Linear FM | VI | B.B |  |  |
| 52 | 02.12.2016 | Frequency Coding Techniques: Principles, | VI | B.B |  |  |
| 53 | 05.12.2016 | Linear FM pulses, Generation and Decoding, | VI | B.B |  |  |
| 54 | 06.12.2016 | Distortion effects on LFM Signals, | VI | B.B |  |  |
| 55 | 08.12.2016 | Discrete Frequencies, | VI | B.B |  |  |
| 56 | 09.12.2016 | Waveform Analysis, | VI | B.B |  |  |
| 57 | 12.12.2016 | Capabilities, | VI | B.B |  |  |
| 58 | 13.12.2016 | Resolution properties of Frequency Coded Pulses. | VI | B.B |  |  |

**CR: CLASS ROOM PPT: POWER POINT PRESENTATION LCD**

**TEXT BOOKS:**

1. Mark. A. Richards, “Fundamentals of Radar Signal Processing”, TMH, 2005.

**REFERENCES:**

1. Fred E. Nathanson, “Radar Design Principles: Signal Processing and the Environment”, 2nd ed., PHI, 1999.

2. Peyton Z. Peebles Jr, “Radar Principles”, John Wiley, 2004.

3. R. Nitzberg, “Radar Signal Processing and Adaptive Systems”, Artech House, 1999.

**FACULTY HEAD OF THE DEPARTMENT**