**SIGNALS AND SYSTEMS LESSON PLAN**

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| Period | Date(tentative) | Topic | Unit no | Teaching methodology |
| **Unit – i: Signal Analysis** | | | | |
| 1 | 27 – 06 - 2017 | Introduction to signals and systems | I | Class room teaching |
| 2 | 29 – 06 - 2017 | Classification of signals |
| 3 | 30 – 06 - 2017 |
| 4 | 03 – 07 - 2017 | Exponential and sinusoidal signals, and properties of elementary signals |
| 5 | 04 – 07 - 2017 | Analogy between vectors and signals |
| 6 | 06 – 07 - 2017 | Orthogonal signal space, signal approximation using orthogonal functions |
| 7 | 10 – 07 - 2017 | Mean square error, closed or complete set of orthogonal functions, and orthogonality in complex functions |
| 8 | 11 – 07 - 2017 | Classification of systems |
| 9 | 13 – 07 - 2017 | Problems |
| 10 | 14 – 07 - 2017 |
| 11 | 17 – 07 - 2017 |
| 12 | 18 – 07 - 2017 |
| 13 | 20 – 07 - 2017 |
| **Unit – iI: Fourier series & Fourier Transform** | | | | |
| 14 | 24– 07 - 2017 | Representation of Fourier series, continuous time periodic signals, trigonometric and exponential Fourier series, Complex Fourier spectrum | II | Class room teaching |
| 15 | 25 – 07 - 2017 |
| 16 | 27– 07 - 2017 | properties of Fourier series, Dirichlet’s conditions. |
| 17 | 28– 07 - 2017 |
| 18 | 31 – 07 - 2017 | Problems |
| 19 | 01 – 08 - 2017 |
| 20 | 03 – 08 - 2017 | Deriving Fourier transform from Fourier series, Fourier transform of arbitrary signals and standard signals, properties of Fourier transforms, Fourier transform of periodic signals |
| 21 | 04 – 08 - 2017 |
| 22 | 07 – 08 - 2017 |
| 23 | 08 – 08 - 2017 | Problems |
| 24 | 10 – 08 - 2017 |

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| Period | Date(tentative) | Topic | Unit no | Teaching methodology |
| **Unit – iII: Continuous Time LTI systems** | | | | |
| 25 | 11 – 08 - 2017 | Linear time variant and invariant systems, Representation of continuous time signals in terms of impulses. | III | Class room teaching |
| 26 | 14 – 08 - 2017 | Unit impulse response and the convolution integral representations of LTI system, transfer function of a LTI system |
| 27 | 17 – 08 - 2017 |
| 28 | 18 – 08 - 2017 | Filter characteristics of linear systems. Distortion less transmission through a system, signal bandwidth, system bandwidth, ideal LPF, HPF and BPF characteristics |
| 29 | 28 – 08 - 2017 |
| **I MID** | | | | |
| 30 | 29 – 08 - 2017 | Causality and Poly-Wiener criterion for physical realization | III | Class room teaching |
| 31 | 31 – 08 - 2017 | Problems |
| 32 | 01 – 09 - 2017 |
| 33 | 04 – 09 - 2017 |
| **Unit – iV: Convolution, Correlation and Sampling of Signals** | | | | |
| 34 | 05 – 09 - 2017 | Concept of convolution and correlation in time domain and frequency domain | IV | Class room teaching |
| 35 | 07 – 09 - 2017 | Cross correlation and auto correlation |
| 36 | 08 – 09 - 2017 | Energy and power density spectrum |
| 37 | 11 – 09 - 2017 | Properties of correlation |
| 38 | 12 – 09 - 2017 | Problems |
| 39 | 14 – 09 - 2017 |
| 40 | 15 – 09 - 2017 | Sampling theorem, Impulse sampling, Natural and Flat top sampling |
| 41 | 18 – 09 - 2017 |
| 42 | 19 – 09 - 2017 | Reconstruction of signal from its samples, effect of under sampling – Aliasing |
| 43 | 21 – 09 - 2017 |
| 44 | 22– 09 - 2017 | Problems |
| 45 | 25 – 09 - 2017 |
| **Unit – V: LAPLACE AND Z – TRANSFORMS** | | | | |
| 46 | 26 – 09 - 2017 | Review of Laplace transforms, Laplace Transforms of typical signals, properties of LT, relation between LT and FT of a signal. Region of convergence (ROC) and constraints on ROC. Inverse Laplace transforms | V | Class room teaching |
| 47 | 03 – 10 - 2017 |
| 48 | 27 – 09 - 2017 |
| 49 | 05 – 10 - 2017 | Problems |
| 50 | 06 – 10 - 2017 |
| 51 | 09– 10 - 2017 |
| 52 | 10 – 10 - 2017 | Introduction to z-transform and its properties, Inverse Z-Transform, simple mathematical problems and ROC |
| 53 | 12 – 10 - 2017 |
| **II MID** | | | | |