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| Course: M. Sc. Electronic Science | Name of Faculty: Arun A. Balakrishnan |
| Topic: 16-305-0103 - Signals & Systems | Semester: I |
| Lecture Hall: Room No. 116 | Timings: as per CBCS, slot D |

| Week and date | Lecture topics | Assignments | Remarks |
|-----------------------------------|--|--------------------------------|----------------|
| Week 1 (8 th July 19) | Signals as functions- Signal taxonomy- basic operations on signals | | |
| Week 2 (15 th July 19) | Some signal models - impulse function, step functions and other singularity functions | | |
| Week 3 (22 nd July 19) | Systems: Time-domain representation and analysis of LTI and LSI systems – Convolution | | |
| Week 4 (29 th July 19) | Convolution sum, convolution integral and their evaluation – Causality and stability considerations | | |
| Week 5 (5 th Aug 19) | Representation of periodic signals: Continuous Time Fourier Series – convergence of Fourier series – Gibbs phenomenon | <i>Assignment-1</i> | |
| Week 6 (12 th Aug 19) | <i>First Internals</i> | | |
| Week 7 (19 th Aug 19) | Representation of aperiodic signals: Continuous Time Fourier Transform – The Fourier Transform for periodic signals | <i>Assignment-1 submission</i> | |
| Week 8 (26 th Aug 19) | Properties of Fourier representations – Frequency Response of systems characterized by linear constant coefficient differential equations | | |
| Week 9 (2 nd Sep 19) | Signals and vectors – inner product of signals – norm- notion of length of signal and distance between signals | <i>Assignment-2</i> | |
| <i>Onam Vacation</i> | | | |
| Week 10 (17 th Sep 19) | orthogonal signal space – Power spectral density and energy spectral density – Hilbert Transform – In-phase and quadrature representation of band pass signals | | |
| Week 11 (23 rd Sep 19) | Frequency response Function – signal transmission through a linear system – ideal filters – band width and rise time Sampling: sampling theorem – sampling with Zero Order Hold and reconstruction – interpolation | | |
| Week 12 (30 th Sep 19) | Frequency analysis of discrete time signals and systems – Discrete time Fourier series and Discrete time Fourier Transform – Frequency response function – Discrete Fourier Transform | <i>Assignment-2 submission</i> | |
| Week 13 (10 th Oct 19) | Region of convergence – Analysis of continuous time systems – Transfer function – Frequency response from pole – zero plot | | |
| Week 14 (15 th Oct 19) | Z-transform: Region of convergence – Properties of ROC and Z transform - Analysis of LSI systems | | |
| Week 15 (21 st Oct 19) | Transfer function- Frequency response from pole – zero plot | | |
| Week 16 (28 th Oct 19) | <i>Second Internals</i> | | |
| Week 17 (5 th Nov 19) | <i>Publication of Sessional</i> | | |