

Course Type	Course Code	Name of Course	L	T	P	Credit
DC	EEC201	Signals, Systems and Networks	3	1	0	11

### Course Objective

The course will help learning the concepts and principles of Electrical Engineering, which are at the heart of today's analog and digital electronic. The course will impart fundamental knowledge on different types of signals, systems and their analyzing tools. The course will also give thorough knowledge on electrical circuits and their methods of analyses.

### Learning Outcomes

Upon successful completion of this course, students will:

- understand the basics of electrical signals, systems and circuits
- understand, build and analyze electrical circuits such as two-port networks, filters etc.

Unit No.	Topics to be Covered	(Lecture +Tutorial) Hours	Learning Outcome
1	System classification, Systems modelling in terms of differential equations, Periodic signal analysis, Fourier series, Aperiodic signal analysis, Fourier transform.	6+3	Understanding systems, different test signals and basic analysis tools.
2	Network theorems, Formulation of network equations, Source transformation.	6+1	Understanding of basic tools of network analyses.
3	Laplace transformation (LT), Inverse Laplace transform, LT of standard test signals, Synthesis of different waveforms using LT, Transient solution of RL, RC, LC, RLC circuits.	10+4	An in-depth knowledge on Laplace transformation for engineering application.
4	Convolution integral, Network functions: Driving point impedance and Transfer functions, Poles and Zeroes, Concept of Stability, Routh's criteria.	6+2	Understanding of system representation and stability.
5	Two-port networks, short-circuit admittance parameter, open-circuit impedance parameters, Transmission parameters, hybrid parameters, series, parallel and cascade connection of two port networks.	8+3	Understanding different two-port networks and their applications.
6	Passive Constant-k filters, m-derived filters, Introduction to Analog and Digital filters.	6+1	Understanding of filters, their design and application.

### Text Books

1. Networks and Systems — D. Roy Choudhury.
2. Modern Control Engineering - K. Ogata.

### Reference Books

1. Network Analysis — M. E. Van Valkenburg.