



CO3	M	M			L							M		
CO4	H	M	H	M	L							M	L	
CO5	L		H	M		L				L		M		

#### f. Course Content:

**UNIT I: Classification of Signals and Systems** **10+3**

Continuous Time signals (CT signals) – Discrete Time signals (DT signals) – Elementary CT signals and DT signals – Classification of CT and DT signals – Basic properties of systems – Classification CT systems and DT systems – Linear time invariant systems and properties.

**UNIT II: Continuous Time Signals and Systems** **10+3**

Fourier series analysis: Spectrum of Continuous Time signals – Physical meaning of Fourier series. Fourier Transform in signal analysis – Fourier transforms in system analysis: Differential equation – block diagram representation – convolution integral and impulse response.

**UNIT III: Representation of Discrete Time Signals** **10+3**

Sampling of Continuous Time signals and aliasing – DTFT and properties – z-transform – Properties of z-transform and physical meaning of DTFT – z transform in Discrete Time signal analysis – DFT basics.

**UNIT IV: Discrete Time Systems** **11+3**

Difference equations – Block diagram representation – Convolution sum and impulse response – LTI systems analysis using DTFT and z-transforms.

**UNIT V Applications** **7**

Applications in communication system: Complex exponential and sinusoidal amplitude modulation – demodulation for sinusoidal AM – Frequency division multiplexing–Amplitude modulation with pulse train carrier – Pulse amplitude modulation–Discrete time sinusoidal amplitude modulation system.

**Total:60 Periods**

#### f. Learning Resources:

##### Text Books

1. Allan V. Oppenheim et al, “Signals and Systems”, 2<sup>nd</sup> edition, Prentice Hall of India Pvt. Ltd, 2004.

## **References**

1. Ashok Ambardar, "Analog and Digital Signal Processing", Thomson Learning Inc., 1999.
2. Douglas K.Lindner, "Signals and Systems", McGraw-Hill International, 1999.
3. Simon Haykin and Barry Van Veen, "Signals and Systems", John Willey & Sons, Inc, second edition 2013.

## **Online resources**

- 1.[www.ee.columbia.edu/~rmcastro/3801/](http://www.ee.columbia.edu/~rmcastro/3801/)
- 2.<http://services.eng.uts.edu.au/pmcl/ss/>
- 3.<http://www.tcyonline.com/tests/signals-and-systems-1>

## **Online resources**

1. [www.ee.columbia.edu/~rmcastro/3801/](http://www.ee.columbia.edu/~rmcastro/3801/)
2. <http://services.eng.uts.edu.au/pmcl/ss/>
3. <http://www.tcyonline.com/tests/signals-and-systems-1>