



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Electronics and Communication Engineering	Year of Regulation	2018-19
Department	Electronics and Communication Engineering	Semester	IV

Course Code	Course Name	Credit Structure				Marks Distribution				
		L	T	P	C	INT	MID	END	Total	
EC 202	Signals and Systems	3	1	0	4	50	50	100	200	
Course Objectives	To familiarize elementary ideas of signals and systems classification and their properties for both continuous-time and discrete-time cases	Course Outcomes	CO1	Able to understand and solve problems involving signals and systems that arise in broad array of applications						
	To analyze the continuous and discrete linear time invariant system using impulse response		CO2	Able to represent any general signals as linear combination of impulses and characterization of any linear time invariant system using convolution sum and integral						
	To represent the continuous and discrete signals in terms of Fourier series and transform		CO3	Able to apply the Fourier series and transform for analyzing of signals						
	To analyze the linear time invariant system using Fourier series and transform for both continuous-time and discrete-time		CO4	Able to apply the Laplace transform and z transform for analyzing of continuous time/ discrete time signals and systems						
	To analyze and investigate stability and instability of system using Laplace and Z-transforms.									

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs			
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
1	CO1	2	2	2	1	1	-	-	-	-	-	-	-	2	-	1	-
2	CO2	2	2	2	1	-	-	-	-	-	-	-	-	2	-	2	-
3	CO3	2	2	2	2	2	-	-	-	-	-	-	2	2	2	2	-
4	CO4	2	2	2	2	2	-	-	-	-	-	-	2	2	2	2	-

SYLLABUS

No.	Content	Hours	COs
I	Classification of Signals, Operation on Continuous Signals and Discrete Signals, Properties of Signals, Classification of Systems and Properties of Systems	10	CO1
II	Discrete-Time and Continuous-time LTI Systems: The Convolution, Properties of LTI systems, Convolution of Finite Sequences, Correlation of signals.	08	CO2
III	Frequency Analysis of Continuous-Time Signals, Frequency Analysis of Discrete-Time Signals, Properties of The Fourier Transformation For Continuous-time and Discrete-Time signals, Frequency Sampling Method of Designing FIR Filters.	12	CO3
IV	Frequency-Domain Characteristics of LTI Systems, Introduction of Laplace-transform, Properties of the Laplace transforms, Inversion of the Laplace transform, Analysis of Linear-Time-Invariant Systems using Laplace transforms.	08	CO4
V	Introduction of Z-transform, Properties of the Z-Transformations, Inversion of the z-transform, One-Sided Z transformation, Analysis of Linear-Time-Invariant Systems in the Z-Domain	06	CO4
Total Hours		44	

Essential Readings

- Oppenheim Alan V., Wilsky Alan S. and Nawab Hamid S., "Signals and Systems, Pearson Educations, 2nd edition, 1997
- Prokis John G., "Digital Signal Processing: Principle, Algorithms, and Applications", Pearson Educations, 4th edition, 2007
- Prokis John G., "Digital Signal Processing: Principle, Algorithms, and Applications, Pearson Educations, 4th edition, 2007.

Supplementary Readings

- Lathi B. P., "Linear Systems and Signals", Oxford University Press, 2nd edition, 2009