BASIC SIMULATION LAB

Course Code	20ES1355	Year	II	Semester	I
Course Category	Engineering Sciences	Branch	ECE	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	Nil
Continuous Internal Evaluation:	15	Semester End Evaluation:	35	Total Marks:	50

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Analyse various types of signals and sequences.
CO2	Apply convolution and correlation operations on different signals
CO3	Analyse various circuits in the time and transform domains using transient analysis methods.
CO4	Analyse various networks by applying transformation techniques, mesh analysis, nodal analysis and network theorems
CO5	Determine the characteristics of different two port networks
CO6	Make an effective report based on experiments.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		3											3	
CO2	3												3	
CO3		2											2	
CO4		2											2	
CO5					2								2	
CO6										3			3	
Average* (Roundedto nearest Integer).,	3	3	3		2					3			3	

Syllabus

Any Ten Experiments (H/W or Simulation)		
Expt. No.	**Contents**	**Mapped CO**
1	Generation of Various Signals and Sequences such as Unit impulse, Unit step, Square, Triangular, Sinusoidal, Ramp and Sync functions	**CO1,CO6**
2	Operations on Signals and Sequences such as Addition, Multiplication, Scaling, Shifting and Folding	**CO1,CO6**
3	Verification of Linearity and Time Invariance properties of a given Continuous / Discrete-time system.	**CO1,CO6**
4	Convolution of Signals and Sequences.	**CO1,CO2,CO6**

5	Computation of Unit Sample and Unit Step Response of given LTI System	**CO1,CO2,CO6**
6	Find the Fourier Transform of a given signal and plot its magnitude and phase spectrum	**CO1,CO2,CO6**
7	Auto Correlation and Cross Correlation of Signals and Sequences	**CO1,CO2,CO6**
8	Experimental determination of time constant of series RL & RC circuits	**CO1,CO3,CO6**
9	Experimental determination of frequency response of RLC circuits	**CO1,CO3,CO6**
10	Experimental verification of Thevenin's and Norton's theorems	**CO4,CO6**
11	Experimental verification of Superposition Theorem& Maximum power transfer Theorem	**CO1,CO4,CO6**
12	Simulation of a given series resonance circuit	**CO1,CO5,CO6**
13	Determination of parameters for a given two port network	**CO5,CO4,CO6**

Learning Resources

Text Books

1. A. V. Oppenheim, Alan S. Wilsky with S.H. Nawab, 'Signals andSystems', 2/e, Pearson, 1997
2. M. E.Van Valkenburg, Network Analysis, III Edition , Pearson Education
3. A. Sudhakar and Shyammohan S. Palli, Circuits and Networks, 5th Ed.,McGraw Hill

Reference Books

1. Simon Haykin, Barry Van Veen, 'Signals and Systems', 2/e, Wiley Student Edition.
2. Bhagawandas P. Lathi, 'Linear Signals and Systems', Oxford University Press, 2009.3.Signals and Systems using MATLAB, Kindle Edition, Luis Chaparro
4. William H. Hayt, Jack E. Kimmerly and Steven M. Durbin, Engineering Circuit Analysis, 8th Edition, Tata McGraw Hill
5. Ravish R. Singh , Network Analysis and Synthesis, First Edition, Tata McGraw Hill Education(India) Pvt. Ltd, New Delhi

e- Resources & other digital material

1. http://www.cdeep.iitb.ac.in/nptel/Electrical%20&%20Comm%20Engg/Signals%20and%20System/TOC-M1.htm
2. http://www.cdeep.iitb.ac.in/nptel/Electrical%20&%20Comm%20Engg/Signals%20and%20System/Course%20Objective.htm.
3. http://www.stanford.edu/~boyd.ee102
4. http://www.ece.gatech.edu/users/bonnie/book
5. http://ocw.mit.edu
6. https://www.tutorialspoint.com/network_theory/network_theory_quick_guide.htm
7. https://nptel.ac.in/courses/108/105/108105159/