Department of Computer Science and Engineering
Lesson Plan:

Course Title: Signals and Systems (SS)
Course Code: EEE 201
Level/Term: Mid-Level
Section:
Credit: 03
Contact Hours: 39
Prerequisite: Engineering Mathematics II, IV
Type: Core/Major:
Session: February, 2019

Instructor: Eftekhar Hossain
Class schedule:
Counseling Time:
Room No:
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Rationale: Intended to enable the learners to analyze different types of signals and also design different types of systems. Analyze Fourier, Laplace and Z- transform in terms of signal.

Course Objectives:

- To develop good understanding about signals, systems and their classification; (PEO1, PEO2)
- To understand different system properties and identify whether a given system exhibits these properties and its implication for practical systems. (PEO1, PEO3)
- To analyze the time and frequency domain representations of continuous time signals with Fourier and Laplace transforms. (PEO3, PEO4)
- To present the concepts of convolution and also understand the properties in the context of signals/systems and lay down the foundation for advanced courses. (PEO1, PEO2, PEO3,PEO4)

Course Outcomes (COs):
After successful completion of this course, you should be able to:

1. Represent & classify signals, Systems & identify LTI systems. (PO1, PO2, PO3, PO5)
2. Perform mathematical and graphical convolution of Continuous Time signals. (PO5, PO6)
3. Find Fourier and Laplace transform for different signals. (PO3, PO4, PO6)
4. Solve differential equations describing linear, time invariant (LTI) systems. (PO4, PO6, PO7)

Assessment: Class tests, assignments/homework, class attendance and class participation, midterm exam, final exam.

Text and Reference books:

1. Linear Systems and Signals, *B. P. Lathi*,
2. Signal and Systems, *Simon Haykin (3rd edition),*
3. Analysis of Linear Systems, *D K Cheng*

CO Delivery & Assessment:

COs	Corresponding Pos	Bloom's taxonomy domain/level *(C: Cognitive, P: Psychomotor A: Affective)*	Delivery methods and activities	Assessment tools
CO1	P2	C4	Lecture, Problem solution	Quiz, Final Exam, Mid
CO2	P3	C5	Lecture notes	Final Exam, Assignment
CO3	P2	C3	Lectures Notes, Practice Problems	Final Exam, Class Test
CO4	P3	C5	Lectures, Notes, Practice Problems	Final Exam, Class Test

CO/PO mapping												
COs	Program Outcomes (POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	√	√	√		√							
CO2					√	√						
CO3			√	√		√						
CO4				√		√	√					

Lesson Plans (3hours = 1.5*2=26 classes)

Lesson	**Topic**	**Teaching strategy**	**Course Outcome (CO)**	**Assessment Strategy**
Date-1	Introduction to signal and system, classification of signals	On Board Discussion	CO1	
Date-2	Introduce to different types of signals and their graphical representation	On Board Discussion	CO1	
Date-3	Determining power, energy and periodic and aperiodic signals	On Board Discussion	CO1, CO4	
Date-4	Basic operation on signals	On Board Discussion	CO1, CO4	

Date-5	Signal Representation using unit step function and ramp function **Declaration of Assignment-I**	On Board Discussion	CO1, CO4	
Date-6	Classification of systems: Linearity and Time variance, Static and Dynamic	On Board Discussion	CO1,	
Date-7	Significance of LTI system and impulse response			
Date-8	Classification of systems: Causality and Stability **AND SUBMISSION OF ASSIGNMENT-I**	On Board Discussion	CO1, CO4	Written individual assignment
Date-9	Problem solving of Causality and Stability	Details discussion with examples from reference book.	CO1, CO4	Written exam
Date-10	**Class Test - I**		CO1, CO4	
Date-11	Introduction to graphical convolution,	Class room lecture	CO1, CO4	
Date-11	Problem solving of convolution	Details discussion with examples from reference book	CO1, CO4	
Date-12	Problem solving of convolution, **Analogues system Differential equation, Time domain analysis and solution techniques, Zero state and zero input response,**	Class room lecture	CO1, CO4	
Date-13	Problem solving of **Time domain analysis**	Details discussion with examples from reference book.	CO1, CO4	
Date-14	**MID TERM**		CO1, CO4	Written Exam
Date-15	State variable - basic concept, State equation and Time domain solution	Class room lecture examples	CO1, CO4	

Date-16	Problem solving on state variable representation	Details discussion with examples from reference book.	CO1, CO4	
Date-17	Fourier series- properties, Harmonic representation, significance and advantages **Declaration of Assignment-II**	Details discussion with examples from reference book.	CO1, CO3	
Date-18	Applications of time and frequency domain analyses, Problem solving on Fourier series	Details discussion with examples from reference book.	CO1, CO3	
Date-19	Problem solving on exponential Fourier series **AND SUBMISSION OF ASSIGNMENT-I**	Details discussion with examples from reference book.	CO2, CO3	Written Individual submission
Date-20	**CLASS TEST -2**		CO1, CO2, CO4	Written Exam
Date-21	Introduction to Laplace transform and its applications	Lecture and problem solving	CO1, CO2, CO4	
Date-22	Problem solving on Laplace transform	Details discussion with examples from reference book.	CO1, CO3, CO4	
Date-23	Problem solving on Laplace transform	Details discussion with examples from reference book.	CO3	
Date-24	Introduction with analog electrical and mechanical systems	Details discussion with examples from reference book.	CO1, CO3, CO4	
Date-25	Conversation of a mechanical system into an electrical circuit	Details discussion with examples from reference book.	CO1, CO3, CO4	

Date-26	Review class			
	FINAL EXAM		CO1, CO2, CO3, CO4	Written Exam
** Another Class Test may be taken if necessary. Any one of three class test can be pop test or instant test. Not more three class test can be happened.				