Faculty of Computers and Information Technology

Signals and Systems

Information :

Course Code :	DM231	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours
Department :	Digital Media Technology				

Instructor Information :

Title	Name	Office hours
Lecturer	Eman Ahmed Sayed Ahmed	1
Teaching Assistant	Ibrahim Ayman Ibrahim Ahmed Tagen	

Area Of Study :

Comprehend deeply the basic concepts and theories of continuous and discrete-time signals.
Understand basic mathematics to learn the principles of signal convolution.
Solve problems of linear time-invariant systems based on problem requirements.
Compare, evaluate and select methodologies to learn important signal transforms such as continuous time and discrete time Fourier transforms, Laplace transform and z-transform.

Description :

Introduction to continuous time and discrete time signals and systems, linear time invariant systems, Fourier transform for continuous and discrete time signals, Sampling theorem, Laplace transform, Z-Transform, Transfer function; State apace representation; Applications

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Identify the fundamental concepts and theories related to analog signals and systems description and classification
2 -	Discuss fundamental mathematics required to signal convolution integral
3 -	Explain the fundamental topics of signal transform such as Fourier transform, Laplace transform and z-transform
b.Intellectual Skills: :	
1 -	Analyze the application of signal convolution integral
c.Professional and Practical Skills: :	
1 -	Use MATLAB in signal analysis
2 -	Deploy effective computing technologies to solve problems of linear time invariant systems
3 -	Apply effective information to acquire and manage information storage and retrieval skills in signal transforms
d.General and Transferable Skills: :	
1 -	Exploit a range of learning resources

ABET Course outcomes :

1 -	Demonstrate adequate understanding of the basic concepts and theories of continuous and discrete-time signals.
2 -	Understand basic mathematics to learn the principles of signal convolution.
3 -	Solve problems of linear time-invariant systems based on problem requirements.
4 -	Compare, evaluate, and select methodologies to learn important signal transforms such as continuous time and discrete time Fourier transforms, Laplace transform and z-transform.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Basic Signals and Systems: Continuous-Time Signal and Discrete-Time Signal	4	2	2
Basic Signals and Systems: Unit impulse and unit step functions	4	2	2
Basic Signals and Systems: Sampling and aliasing	4	2	2
Basic Signals and Systems: Continuous-time and discrete-Time signal properties.	4	2	2
Linear Time-Invariant (LTI) Systems: Convolution sum, the convolution integral	4	2	2
Linear Time-Invariant (LTI) Systems: Properties, difference and differential equations	4	2	2
Fourier Series Representation of Periodic Signals: Continuous- and Discrete-Time	4	2	2
Fourier Series Representation of Periodic Signals: Properties of Continuous-Time and Discrete-Time Fourier Series	4	2	2
Mid-Term Exam	2		
Continuous-Time Fourier Transform (CTFT)	4	2	2
Discrete-Time Fourier Transform (DTFT)	4	2	2
Laplace Transform	4	2	2
Z Transform	4	2	2
Final Exam	2		

Teaching And Learning Methodologies :

Interactive Lectures including Discussions
Tutorials
Practical Lab Sessions
Self-Study (Project / Reading Materials / Online Material / Presentations)
Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00	4	
Final Exam	40.00	14	
Midterm Exam (s)	30.00	9	
Others (Participations)	10.00		

Quizzes	10.00	5	

Course Notes :
An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Web Sites :
Math Works Website http://www.mathworks.com