

Faculty of Computers and Information Technology

Digital Signals Processing

Information:

Course Code: DM331 Level: Undergraduate Course Hours: 3.00- Hours

Department: Digital Media Technology

<u>Instructor Information :</u>				
Title	Name	Office hours		
Lecturer	Amal Safwat Mehanna			
Teaching Assistant	Nadia Alaa Talaat Tawfik			

Area Of Study:

"Use and adopt fundamental concepts and properties of discrete linear time invariant systems.

Description:

Review of principles of discrete signals in time and frequency; Transform-domain representations of discrete time sequences; Fast Fourier transform; Structural representations of digital filters; Digital Filter design problems; Implementation aspect of DSP algorithms; Introduction to filter banks and wavelets; Introduction to spectral estimation; Applications

Course ou	itcomes :
a.Knowled	dge and Understanding: :
1 -	Discuss the fundamental concepts and theories related to discrete-time signals and systems description and classification, know the different types of Digital signals and systems.
2 -	Discuss the fundamental mathematics required toFourier series in different forms, and learn discrete time and fast Fourier transforms.
3 -	Identify the fundamental topics of implementation of discrete time systems, and digital filter design
b.Intellect	ual Skills: :
1 -	Analyze the discrete signals in time and frequency domains
2 -	Propose set of alternative solutions for discrete systems in time and frequency domains by examples on electric systems
3 -	Select appropriate methodologies and techniques for digital filter design
c.Professi	onal and Practical Skills: :
1 -	Deploy MATLAB for implementing different discrete time signal processing techniques
2 -	Create technical reports according to professional standards
3 -	Apply effective information storage and retrieval skills indifferent signal transforms

[&]quot;Solve problems using mathematical knowledge to convolve two discrete time signals.

[&]quot;Use all available principles and tools to solve difference equations and system function, and design digital filters."

[&]quot;Compare and evaluate different methods to learn discrete-time Fourier series, discrete time Fourier transform (DTFT), Z-transform, and Fast Fourier transform (FFT).



d.General and Transferable Skills: :

- 1 Exploit a range of learning resources
- 2 Work on a team for the development of a requirements document, and manage time to meet deadlines
- 3 Apply communications skills in presentation and report writing of requirements engineering deliverables

ABET Course outcomes:

- 1 Use and adopt fundamental concepts and principles of discrete linear time invariant systems.
- 2 Solve problems using mathematical knowledge to convolve two discrete time signals.
- 3 Use advanced techniques and tools to solve difference equations and system function, and design digital filters.
- 4 Compare and evaluate different methods and techniques of discrete-time Fourier series, discrete time Fourier transform, Z-transform, and Fast Fourier transform.

Course Topic And Contents :				
Topic	No. of hours	Lecture	Tutorial / Practical	
Introduction to Digital Signal Processing	4	2	2	
Discrete-Time Signals	4	2	2	
Discrete-Time Systems	4	2	2	
The Z- Transform	4	2	2	
Sampling of Continuous Time Signals (p1)	4	2	2	
Sampling of Continuous Time signals (p2)	4	2	2	
Structures for Discrete-Time Systems	4	2	2	
Filter Design Techniques (p1)	4	2	2	
Mid-Term Exam	2			
Filter Design Techniques (p2)	4	2	2	
The Discrete-Fourier Transform (p1)	4	2	2	
The Discrete-Fourier Transform (p2)	4	2	2	
Computation of the Discrete Fourier Transform	4	2	2	
Final Exam	2			

Teaching And Learning Methodologies:

Interactive Lectures including Discussions

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	5.00	4		
Final Exam	40.00	14		
Midterm Exam (s)	30.00	9		



Others (Participations)	5.00		
Quizzes	5.00	5	
Research and Reporting	5.00		

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)

Recommended books:

A. Oppenheim, A. Willsky and S. Hamid, Signals and Systems, Latest edition, ISBN: 978-0138147570

Web Sites:

http://www.mathworks.com