Faculty of Engineering & Technology

Digital Signal Processing

Information :

Course Code :	COM 561	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Electronics & Communication

Instructor Information :

Title	Name	Office hours
Lecturer	Ashraf Ramadan Abdel Elaziz Abo Elalaa	2
Assistant Lecturer	Marwa Mohamed Zaki Mohamed Shaheen	1

Area Of Study :

ÅDevelop studentsô knowledge about the fundamentals of digital signal processing (DSP) systems and their evolution.
ÅPrepare students to design digital filters.
ÅTrain students to evaluate the performance of digital filters.

Description :

Digital filter design: finite impulse response, Infinite impulse response, Adaptive digital filters: concepts, algorithms, applications, Speech coders: speech signal analysis, waveform coders, vocoders, hybrid coders, Image processing: image coding, image enhancement, image compression.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	a1. Explain the fundamentals and theories of linear time-Invariant (LTI) systems.
2 -	a2. Explain the fundamentals and theories of the Z-Transform and Inverse Z-Transform, applied to discrete time signals and systems.
3 -	a3. Explain the fundamentals and theories of the discrete-time signals, and the frequency domain representation of sampling.
4 -	a4. Explain the FIR and IIR filter design techniques and state their related terms.
5 -	a5. Interpret the principles of digital filters and their application in different communication systems.
b.Intellectual Skills: :	
1 -	b1. Analyze and design LTI systems and digital filters.
2 -	b2. Use software tools in programming different DSP systems and evaluate their performance.
3 -	b3. Establish a technical design report on an assignment.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Discrete Time Signals and their operations	5	3	2
Discrete Time systems and their properties	10	6	4

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Linear Time-Invariant Systems	5	3	2
Z-Transform and Inverse Z-Transform	15	9	6
Periodic Sampling	5	3	2
Frequency Domain Representation of Sampling	5	3	2
Continuous-Time Processing of Discrete-Time Signals	5	3	2
Digital Processing of Analog Signals	10	6	4
FIR and IIR Filter Design Techniques	15	9	6

Teaching And Learning Methodologies :

Interactive Lecture
Discussion
Problem Solving
Project/Assignment

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
ÅFinal exam	40.00		
o In Class Quizzes	10.00		
o Mid-Term exams	30.00		
o Performance	20.00		

Course Notes :

Instructor notes

Recommended books :

B. P. Lathi, Modern Digital and Analog Communication Systems, Oxford University Press, 2010.