Faculty of Engineering
at Shoubra

Model No.12
Course Specifications : Digital Signal Processing

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

1- Course Data

Course Code : ECE 412 Course Title : Digital Signal Processing Study Year : Fourth Year

Specialization :

Teaching Hours:

Lecture : 3 Tutorial : 2 Practical :

2- Course Aim

For students undertaking this course, the aims are to:

2.1- - Evaluate the basic features of DSP and to provide students with an understanding of the fundamental of Digital Filter, its protective functions.

2.2- - List the advantages and disadvantages, and its applications.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

a- 1- Define continuous time and discrete time signals properties in time domain .(a1)

a- 2- Define Sampling theorem and DSP Flow Scheme, Quantization effect (a1)

a- 3- State continuous signals properties in frequency domain and analyze them using Fourier transform and Fast Fourier transform .(a1)

a- 4 - Demonstrate methodologies of data collection interpretation and solving engineering problems for signals in DSP.(a6)

b- Intellectual Skills

At the end of this course, the students will be able to:

b- 1 - Select appropriate mathematical for modeling different types of signals. (b1)

b- 2 - Select appropriate solutions for engineering problems based on analytical thinking for the signal properties and applications.(b3)

b- 3 - Think in a creative and innovative way in problem solving and design of communication systems. (b4)

c- Professional Skills

On completing this course, the students are expected to be able to:

c- 1 - Apply knowledge of signal types and properties to solve engineering problems.(c1)

c- 2 - Use a wide range of analytical tools, and software packages to study Fourier series and Fourier transform properties.(c6)

c- 3 - Apply numerical modeling methods for communication systems.(c7)

d- General Skills

At the end of this course, the students will be able to:

d- 1- Effectively manage tasks, time, and resources. (d6)

d- 2 - Develop skills related to creative and critical thinking as well as problem solving (d12)

4- Course Contents

No.	Topics	No of hours
1	Introduction to Digital Signal Processing	6
2	Digital signal manipulation	3
3	Digital systems	3
4	Convolution	6
5	DTFT	3
6	IDFT and Frequency Response	3
7	DFT and DFS	3
8	Circular Convolution	3
9	FFT	3
10	Z-Transform	3

5- Teaching and Learning Methods

5.1- Modified Lectures
5.2- Class activity
5.3- Case study
5.4- Assignments / homework

6- Teaching and Learning Methods of Disables

6.1- nothing

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge and intellectual skills.
2	Quiz to assess knowledge, intellectual .
3	Mid-term exam to assess assess knowledge, intellectual.
4	Oral exam to assess knowledge and intellectual skills. professional and general skills
5	Final exam to assess knowledge, intellectual

b- Assessment Schedule

No.	Assessment	Week
1	Assessment on	2, 5, 9, 11
2	Quizzes on	4, 6, 10, 12
3	Mid-term exam on	8
4	Oral Exam on	14
5	Final exam on	15

c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	10 %
Final_Term Examination	60 %
Oral Examination	20 %
Practical Examination	0 %
Semester work	10 %
Other types of assessment	0 %
Total	100 %

8- List of References

a- Books

1- -Steven Smith, Digital Signal Processing; A practical guide for Engineers and Scientists,Newnes,2002
2- J.G.Proakis, D.G. Manolakis, Digital signal processing Principles, algorithms, and applications, Fourth Edition,Pearson Prentice Hall, 1992
3- Richard G. Lyons, Understanding Digital Signal Processing. Second Edition, . Mc Graw-Hill, 1999

b- Recommended Books

1- Monson H. Hayes, Digital Signal Processing; Schaumâ€™s Outlines. Mc Graw-Hill, 1999

9- Facilities Required for Teaching and learning

None

- Course Coordinator : Dr. Michael Nasief

- Head of Department : Prof. Dr. Sayed Aboo-Elsood Ward

Model No.11A
Course Specifications : Digital Signal Processing

Faculty of Engineering at Shoubra

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Introduction to Digital Signal Processing	1,2	a1			
2	Digital signal manipulation	3	a1,a2,a3	b1	c1	
3	Digital systems	4	a3	b1	c2	
4	Convolution	5,6	a1,a4	b2	c1,c2	
5	DTFT	7	a4	b2	c2	d1
6	Mid term exam	8	a1,a2,a3	b2,b3		
7	IDFT and Frequency Response	9	a2,a4	b2	c2,c3	d1,d2
8	DFT and DFS	10	a2,a4	b1,b2,b3	c1,c3	d2
9	Circular Convolution	11	a1,a4	b2,b3	c1,c3	
10	FFT	12	a1,a4	b2,b3	c1,c3	d1,d2
11	Z-transform	13	a1,a4	b2,b3	c1,c3	
12	Oral Exam	14	a1	b4	c1,c2,c3	d1,d2
13	Final exam	15	a1,a2,a3,a4	b1,b2		

Course coordinator: **Prof. Dr. Hala mohamed**
Course instructor : **Dr. Michael Nasief**
Head of department: **Prof. Dr. Sayed Aboo –Elsood Ward**

Matrix of course content and ILO's

Course Title: Digital signal processing **Code**: ECE 412
Lecture: 3 **Tutorial**: 2 **Practical**: - **Total:**5
Program on which the course is given: B.Sc. Electrical Engineering
Major or minor element of program: Major
Department offering the program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Academic year / level: **Fourth** Year / **First** Semester 2014-2015
Date of specifications approval: 20/6/2010

Course contents	a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	d1	d2
Introduction to Digital Signal Processing	✓											
Digital signal manipulation	✓	✓	✓		✓			✓				
Digital systems			✓		✓				✓			
Convolution	✓			✓		✓			✓			
DTFT						✓			✓		✓	
IDFT and Frequency Response		✓		✓		✓			✓	✓	✓	✓
DFT and DFS		✓		✓	✓	✓	✓	✓		✓		✓
Circular Convolution	✓			✓		✓	✓	✓		✓		
FFT	✓			✓		✓	✓	✓		✓	✓	✓
Z-transform	✓			✓		✓	✓	✓		✓		

Matrix of course aims and ILO's

Course Title: Digital signal processing **Code**: ECE412
Lecture: 3 **Tutorial**: 2 **Practical**: - **Total:**5
Program on which the course is given: B.Sc. Electrical Engineering
Major or minor element of program: Major
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Department offering the course: Electrical Engineering Department
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Course aims	**a1**	**a2**	**a3**	**a4**	**b1**	**b2**	**b3**	**c1**	**c2**	**c3**	**d1**	**d2**
Evaluate the basic features of DSP	✓						✓	✓	✓			
Provide students with an understanding Fourier analysis and Fourier transform	✓	✓	✓			✓		✓	✓		✓	✓

Course coordinator: **Prof. Dr. Hala Mohamed**

Course instructor: **Dr. Michael Nasief**

Head of department: **Prof. Dr. Sayed Aboo –Elsood Ward**