University: Menoufiya University

College: Faculty of Electronic Engineering

Department: Electronics and electrical communication engineering

Course Specification

1- Course basic information :		
Course Code: EC324	**Course Title:** **Digital Signal Processing**	**Academic year: 2012/2013** **Level (3) – Semester : 2**
Department requirement	**Teaching hours: Lecture** 3 **Tutorial** 2 **Lab** -	

2- Aim of the course	**a- Apply knowledge of mathematics , science and engineering concepts to the solution of engineering problems .** **b- Design a system ; component and process to meet the required needs within realistic constraints .** **c- Design and conduct experiments as well as analyze and interpret data .** **d- Communicate effectively .**
3- Intended Learning Outcomes:	
A- Knowledge and Understanding:	**a1) Concepts and theories of mathematics and sciences, appropriate to the Digital Signal Processing.** **a3) Characteristics of engineering materials related to the Digital Signal Processing.** **a5) Methodologies of solving engineering problems, data collection and interpretation** **a14) Basics of design and analyzing electronic engineering systems, while considering the constraints of applying inappropriate technology and the needs of commercial risk evaluation;** **a24) Analysis of signal processing techniques.**
B- Intellectual Skills	**b1) select appropriate mathematical and computer based methods for modelling and analyzing problems.** **b2) Select appropriate solutions for engineering problems**

	based on analytical thinking. **b3) Think in a creative and innovative way in problem solving and design.** **b7) Solve engineering problems, often on the basis of limited and possibly contradicting information.** **b11) Analyze results of numerical models and assess their limitations.** **b15) Analyze the performance of digital and analog communication systems.**
C- Professional Skills	**c1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.** **c2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.** **c6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.** **c7) Apply numerical modeling methods to engineering problems.** **c13) Practice computer programming for the design and diagnostics of digital and analog communication, mobile communication, coding, and decoding systems.**
D- General Skills	**d2) Work in stressful environment and within constraints.** **d3) Communicate effectively.** **d4) Demonstrate efficient IT capabilities.** **d6) Effectively manage tasks, time, and resources.** **d9) Refer to relevant literatures.**
4- Course Contents	**Introduction, Fundamentals of Discrete Time Signals and systems. , Review study of Analog Filters, Digital Filter Design , Realization of Digital Filter Design , Transform Algorithm (DFT , and FFT) , Power Spectrum Estimation , Principle of Digital Image Processing.**
5- Teaching and Learning Methods	- **Lectures** - **Tutorials** - **Research assignments**
6- Teaching and Learning Methods for disable students	**NA**
7- Student Assessment	
a- Assessment	**- Weekly sheet exercises at class room**

Methods	**- Quizzes** **- Mid term, and final exams**
b- Assessment Schedule	**- Exercise sheet/ Lab assignment : Weekly** **- Quizz-1: Week no 2, 4** **- Mid-Term exam: Week no 8** **- Quizz-2: Week no 10, 12** **- Lab exam: Week no - --** **- Final – term examination: Week no 16**
c- Weighting of Assessment	**- Class tutorial and quizzes : ..... 15 %** **- Mid-term examination: ..... 15 %** **- Case study and/or practical exam: ..... - %** **- Final – term examination: ..... 70 %** **- Other types of assessment: ..... - %** **Total 100 %**
8- List of text books and references:	
a- Course notes	**There are lectures notes prepared in the form of a book authorized by the department**
b- Text books	**1- Fundamentals of statistical signal processing : estimation theory , steven kay , prentice hall , 1993** **2- Digital signal processing , S. Mitra, McGraw-Hill, 1998.**
c- Recommended books	**1- The Digital Signal Processing Handbook, V.K. Madisetti, 2nd Edition, CRC 2008.**
d- Periodicals, Web sites ……etc	**Websites for signal processing.**

Course contents - ILOs Matrix

Content Topics	Week No.	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Introduction	1	a1	b2,b3	C1	d2
Fundamentals of Discrete Time Signals and systems.	2-3	a4 , a3	b11	C2,C6	d3
Review study of Analog	4	a5	b15	C7	d4

Filters					
Digital Filter Design	5-6	A5	B7	C6	D6
Realization of Digital Filter Design ,	7-9	A24	B3,b7	C1	D9
Transform Algorithm (DFT , and FFT)	10-11	A1	B15	C6	D2-d3
Power Spectrum Estimation	12-13	a24	B2	C12	D9
Principle of Digital Image Processing.	14	a14	B5	C13	D6

Course coordinator: **Head of Department:**

Prof. Moawad Ibrahim Dessouky

Date: / /