University / Academy: Menoufiya University

College / Institute: Faculty of Electronic Engineering

Department: Computer Science and Engineering

Course Specification

1- Course basic information:		
Course Code: CSE 371	**Course Title:** **Selected Topics (2)** **"Optical Computers"**	**Academic year: 2011/2012** **Level (3) – Semester : 2**
Faculty requirement	**Teaching hours: Lecture** 3 **Tutorial** 1 **Lab** -	

2- Aim of the course	_ To understand the basic fundamentals of optical computers systems. _ To be proficient in principles of holography and acousto-optic systems. _ To learn how to use optical systems for image processing and pattern recognition.
3- Intended Learning Outcomes:	
A- Knowledge and Understanding:	a1. Concepts and theories of mathematics and sciences, appropriate to the computer science and engineering. a2. Basics of information and communication technology (ICT). a3. Characteristics of engineering materials related to the computer science and engineering. a4. Principles of design including elements design, process and/or a system related to specific computer science and engineering.

	a8. Current engineering technologies as related to computer science and engineering. a13. Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.
B- Intellectual Skills	b1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems. b2. Select appropriate solutions for engineering problems based on analytical thinking. b5. Assess and evaluate the characteristics and performance of components, systems and processes. b13. Select the appropriate mathematical tools, computing methods, design techniques and tools in computer engineering disciplines, for modeling and analyzing computer systems.
C- Professional Skills	c1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. c3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.
D- General Skills	d3. Communicate effectively. d4. Demonstrate efficient IT capabilities.
4- Course Contents	**Introduction (Understanding of optical computer systems for processing) - Topics include use of Coherent optical systems for image processing AND Coherent optical systems for pattern recognition (Nature phenomena of light - Digital Optical Logic - Optical Storage)- Principles of holography AND Acousto-optic systems (Optical Memories AND Holograph mass storage)- Introduction to optical Networking.**
5- Teaching and Learning Methods	- **Lectures.** - **Exercises and tutorials.** - **Research assignments.**

6- Teaching and Learning Methods for disable students	N/A
7- Student Assessment	
a- Assessment Methods	- **Reports, assignments, exercises, and midterm and final written exams to assess knowledge and understanding.** - **Regular oral and written quizzes to assess intellectual skills** - **Oral exams to assess professional skills.** - **Reports, assignments, and discussions to assess general and transferable skills.**
b- Assessment Schedule	- **Quizz-1: Week no 5** - **Mid-Term exam: Week no 8** - **Quizz-2: Week no 11** - **Quizz-3: Week no 14** - **Final – term examination: Week no 15**
c- Weighting of Assessment	- **Class tutorial and quizzes : 5 %** - **Mid-term examination: 10 %** - **Case study and/or practical exam: 10 %** - **Final – term examination: 70 %** - **Other types of assessment: 5 %** **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	-Mohammed a,karim and Abdul A.S.Awwal "Optical computer: an Introduction", 2005. -R.G.Hunspergetr "Integrated Optics theory and Technology" third edition,springer-verlag Berlin, 1991.
c- Recommended books	- None.
d- Periodicals, Web sites ……etc	- None.

Course Contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Introduction (Understanding of optical computer systems for processing)	1, 2	a1, a2, a3, a4	b1, b2	c1	
Topics include use of Coherent optical systems for image processing AND Coherent optical systems for pattern recognition (Nature phenomena of light)	3, 4, 5, 6	a1, a2, a3, a4, a8	b1, b2, b5	c1, c3	d3, d4
Principles of holography AND Acousto-optic systems (Optical Memories AND Holograph mass storage)-	7, 8, 9, 10, 11	a1, a2, a3, a4, a8, a13	b1, b2, b5, b13	c1, c3	d3, d4
Introduction to optical Networking	12, 13	a1, a2, a3, a4, a8	b2, b5	c1,	d3

Course coordinator: **Head of Department:**

Dr. Ahmed SHOUMAN **Prof. Nawal Ahmed El-Fishawy**

Date: / /