Course Specifications

Program(s) on which this course is given:	Electronics & Electrical Communications Engineering
Major or Minor element of programs:	Major
Department offering the program:	Electronics & Electrical Communications Engineering
Department offering the course:	Electronics & Electrical Communications Engineering
Academic year / Level:	Second Year
Date of original/modified specification approval:	2003/
Semester of course offering:	2010-2011/ First

A- Basic Information

1.a. Title:	Computer 2			**1.b. Code:**		ELC 203		
2. Units/Credit hours per week:	2.a. Lectures	4	2.b. Tutorial	2	2.c. Practical	0	2.d. Total	6

B- Professional Information

1. Overall Aims of the Course:	Introducing the architecture of microprocessor, how to design a simple processor and programming the 80x86 processors using Assembly Language.
2. Intended Learning Outcomes of Course (ILOs):	**a) Knowledge and Understanding** 1. Explain how to represent the different types of data in Assembly language (1.7). 2. Explain the basic concepts of Register Transfer Logic. 3. Explain the design concepts of ALU (1.7). 4. Explain the design concepts of a simple processor (1.7). 5. Explain the basic concepts of programming 80x86 using Assembly language (1.7). **c) Professional and Practical Skills** 1. Develop programs using the Assembly language (2.4). 2. Implement a complete ALU Design project (2.9). 3. Implement a complete CPU Design project (2.9).

3. Contents

Topic	Total hours	Lectures	Tutorial/ Practical
Data Representation, Signed and unsigned numbers, Floating Point, ASCII Code, Data Representation in Assembly language	5	3	2
Arithmetic and Logic Unit Design: Design of Arithmetic Unit, Design of Logic Unit, Design of Shift Unit, Design of the arithmetic and Logic Flags (Carry, Overflow, Zero, Parity, Sign and Half Carry), 8086 Arithmetic and logic Instructions.	10	7	3
Register Transfer Logic: Register Transfer notation, Single bus Multiplexer Based Transfer, Multiple Buses Multiplexer Based, Single Bus tri-state transfer, Datapath and control unit,	15	10	5
Simple Processor Design: Definition of Micro and macroinstructions, Instruction Format, Operational Code and operand, structure of a simple CPU, Design of a simple CPU with few number of instructions using single bus multiplexer based or single bus tri-state	24	16	8
80x86 Assembly language: Data transfer instructions, Arithmetic and	24	16	8

logic instructions, Control Transfer Instructions, Interrupt instructions, Writing Programs in Assembly language, 8086 Pin description			

4. Teaching and Learning Methods	Lectures (Y)	Practical Training/ Laboratory (Y)	Seminar/Workshop (N)
	Class Activity (Y)	Case Study (N)	Projects (Y)
	E-learning (N)	Assignments /Homework (Y)	Other:

5. Student Assessment Methods	
5.a. Method	**To assess (with reference to the ILOs)**
- Class test	a1, a2, a3, c1.
- Project (tested in lab)	c2, c3.
- Mid-term exam	a1, a2, a3, a4, a5, c1.
- Final Exam	a1, a2, a3, a4, a5, c1.
5.b. Assessment Schedule	**Week**
-Assessment 1; Class test	4
-Assessment 2; Mid-term exam	8
-Assessment 3; Final exam	15
5.c. Weighting of Assessments	
- Mid-Term Examination	20%
- Final-term Examination	70 %
- Class Test	10%
- Total	100 %

6. List of References
6.a. Course Notes
6.b. Essential Books (Text Books) :
• B. B. Brey, "The Intel Microprocessors", 7th edition, Prentice hall, 2006.
6.c.Recommended Books.
• Logic and computer design fundamentals", M. Morris Mano.
6.d. Periodicals, Web Sites, … etc
7. Facilities Required for Teaching and Learning
• PCs for LABs and Digital Training Kits

Course Coordinator:	**Dr. Ibrahim Qamar**
Head of Department:	**Prof. Dr. Mahmoud El-Hadidi**
Date:	**18.6.2011**