



Course Specifications

Program(s) on which this course is given:	Systems and Biomedical Engineering
Department offering the program:	Systems and Biomedical Engineering
Department offering the course:	Systems and Biomedical Engineering
Academic Level:	Third year
Date	2013-2014
Semester (based on final exam timing)	<input type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring

A- Basic Information

1. Title:	Medical Measurements	Electronics	and	Code:	SBE 303B			
2. Units/Credit hours per week:	Lectures	3	Tutorial	1	Practical	1	Total	5

B- Professional Information

1. Course description:	<p>After completing the course the students are expected to have acquired basic knowledge in:</p> <ul style="list-style-type: none"> • The biomedical parameters measurements and microprocessor principles • System overview and architecture of C8051F020. • 8051 instruction set. • Description and programming of C8051F020 different components including interrupts, DAC, timers/counters, etc.
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2. Intended Learning Outcomes of Course (ILOs):	a) Knowledge and Understanding
	1- Understand basic components of embedded system architecture
	b) Intellectual Skills
	2- Design, program, and analyze embedded systems based in C8051F020 architecture
	3- Write a technical report and/or design specifications.
	c) Professional and Practical Skills
	4- Work as part of an team to complete a technical projects
	5- Present their work
d) General and Transferable Skills	
6- Effectively manage tasks, time, and resources.	

3. Contents

Topic	Total hours	Lectures hours	Tutorial/ Practical hours
Blood pressure and sound	10	6	4
Measurement of flow and volume of blood	6	4	2
Measurements of the respiratory system	8	6	2

System Overview of C8051F020 and Architecture	6	4	2
8051 Instruction Set	6	4	2
System Clock Crossbar and GPIO	4	2	2
Interrupts	4	2	2
Timer Operations and programming	4	2	2
Serial Communication, DAC and Comparator	6	4	2
4. Teaching and Learning Methods	Lectures (*)	Practical Training/ Laboratory (*)	Seminar/Workshop ()
	Class Activity ()	Case Study ()	Projects (*)
	E-learning ()	Assignments /Homework (*)	Other:
5. Student Assessment Methods			
• Assessment Schedule	Week		
-Assessment 1; Lab 1	4		
-Assessment 2; Lab 2	8		
-Assessment 3; Lab 3	12		
-Assessment 4; Project	14		
-Assessment 5; Final Exam	16		
• Weighting of Assessments			
-Mid-Term Examination	%20		
-Final-term Examination	%60		
-Project and laboratory examination	%15		
-Class work	%5		
-Presentation			
-Total	%100		
6. List of References			
<ul style="list-style-type: none"> • R. Aston, "Principles of Biomedical Instrumentation and Measurements", Merrill Publishing Company, Ohio, 1990. • Power Point lectures of Silicon Labs MCUniversity Program. • M. T. Moi, G. S. Gupta Embedded Programming with Field-Programmable Mixed-Signal Microcontrollers, Silicon Laboratories, 3rd Edition, 2008. 			
7. Facilities Required for Teaching and Learning			
<ul style="list-style-type: none"> - Classroom White board (*) - Classroom Laptop and data-show (*) - Electronics Laboratory (*) 			
Course Coordinators:	Dr. Ahmed Salah & Dr. Ahmed Ehab Mahmoud		
Head of Department:	Prof. Dr. Ahmed Badawi		