



## 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:	Second

## A- Basic Information

1.a. Title:	Measurements 2			1.b. Code:		ELC 204		
2. Units/Credit hours per week; 4	2.a. Lectures	0	2.b. Tutorial	0	2.c. Practical	4	2.d. Total	4

## B- Professional Information

1. Overall Aims of the Course:	<ul style="list-style-type: none"> <li>Design and implement passive filters</li> <li>Understand BJT characteristics and implement applications</li> <li>Understand Op-Amp analysis and applications</li> <li>Design and implement arithmetic operations</li> <li>MATLAB simulations for signals and systems problems</li> </ul>
2. Intended Learning Outcomes of Course (ILOs):	<p><b>a) Knowledge and Understanding</b></p> <ol style="list-style-type: none"> <li>Observe the complementary nature of HPF, LPF and BPF, BSF (1.1, 1.2).</li> <li>Identify the effect of input frequency on amplification gain (1.1, 1.2).</li> <li>Recognize the instructions of 8086 microprocessor (1.6).</li> </ol> <p><b>b) Intellectual Skills</b></p> <ol style="list-style-type: none"> <li>Analyze operational amplifier circuits (3.4).</li> </ol> <p><b>c) Professional and Practical Skills</b></p> <ol style="list-style-type: none"> <li>Produce MATLAB simulations for signals and systems problems (2.1).</li> <li>Implement passive and active filters (2.2, 2.3, and 2.4).</li> <li>Implement BJT amplifiers (2.2, 2.3, and 2.4).</li> <li>Design arithmetic operations (2.2, 2.3, and 2.4).</li> </ol> <p><b>d) General and Transferable Skills</b></p> <ol style="list-style-type: none"> <li>Dealing with Op-Amps (4.7).</li> <li>Programming using MATLAB (4.9).</li> <li>Produce academic grade written report (4.7).</li> </ol>

## 3. Contents

Topic	Total hours	Lectures	Tutorial/ Practical
Implementation of passive filters LPF, HPF, BPF, and BSF.	4	0	4
BJT applications. Small signal amplification and distortion.	4	0	4
Operational Amplifiers analysis and design a gain stage.	4	0	4
Design and implementation of full adder and subtractor.	4	0	4
Familiarization with the 8086 Microprocessor.	4	0	4
Introduction to MATLAB commands and MATLAB programming.	4	0	4

Transformation of the independent variables. Calculation of the energy and power for discrete time signals using MATLAB.			4	0	4
Convolution algorithm and implementation of filters using MATLAB.			4	0	4
Calculation of the Fourier series coefficients for periodic signals. Concept of Eigen functions.			4	0	4
Effect of undersampling in continuous-time signals.			4	0	4
4. Teaching and Learning Methods	Lectures (N)	Practical Training/ Laboratory (Y)		Seminar/Workshop (N)	
	Class Activity (N)	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 assignment (Oral questions, check the results, attendance and effort)			a1, a2, a3, b1, c1, c2, c3, c4, d1, d2		
- Project			a1, a2, a3, b1, c1, c2, c3, c4, d1, d2, d3		
- Final-term examination			a1, a2, a3, b1, c1, c2, c3, c4, d1, d2		
5.b. Assessment Schedule		Week			
- Class assignment		Every week at the end of the lab			
- Project		8			
- Final-term Examination		15			
5.c. Weighting of Assessments					
- Class assignment		40%			
- Project		30%			
- Final-term Examination (Oral + Practical)		30% (10% + 20%)			
- Total		100%			
6. List of References					
6.a. Course Notes: Available in hard copies to the students					
6.b. Essential Books (Text Books): N/A.					
6.c. Recommended Books: N/A.					
6.d. Periodicals, Web Sites, ... etc: N/A.					
7. Facilities Required for Teaching and Learning					
Boards, computers with MATLAB software, and hardware elements					
Course Coordinator:	Prof. Dr. Mohamed Riad				
Head of Department:	Prof. Dr. Mahmoud El-Hadidi				
Date:	June 15 <sup>th</sup> , 2011				