



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:	fourth
Date of original/modified specification approval:	2003/
Semester of course offering:	First

A- Basic Information

1.a. Title:	Measurements (4)			1.b. Code:		ELC 404		
2. Units/Credit hours per week:	2.a. Lectures	0	2.b. Tutorial	0	2.c. Practical	4	2.d. Total	

B- Professional Information

1. Overall Aims of the Course:	<ul style="list-style-type: none"> MATLAB simulation for real communications system. Understand serial communications and socket programming. Control DC motors and understand robotics. Learn digital circuit testing and pic microcontroller. Understand principles of the Gunn oscillator and study of the propagation characteristics in free space as well as inside the waveguide.
2. Intended Learning Outcomes of Course (ILOs):	b) Intellectual Skills <ol style="list-style-type: none"> Solve electronic control problems using microcontroller and robots (3.7). Discover the error in a faulty electronic circuit (3.7). c) Professional and Practical Skills <ol style="list-style-type: none"> Design and simulate real communications system using MATLAB (2.2, 2.3, and 2.4). Measure the propagation in free space as well as inside the waveguide (2.6). Design control circuits (2.2, 2.3, and 2.4). Design systems with DC motors and robots (2.2, 2.3, and 2.4) Deal with microcontrollers (2.2, 2.3, and 2.4). d) General and Transferable Skills <ol style="list-style-type: none"> Work efficiently within a multi-disciplinary team and communicate effectively both orally and in writing (4.7). Fulfill requirements of potential employers (4.9).

3. Contents

Topic	Total hours	Lectures	Tutorial/ Practical
Matlab simulation for digital modulation types (communications)	4	0	4
Matlab simulation for CDMA mobile communication system (communications)	4	0	4
Socket Programming (computer)	4	0	4

Serial Communications Lab (computer)		4	0	4
Electronic Control of DC motor EED476		4	0	4
Regulate the motor speed with respect to the load (control)				
A practical introduction to robotics (control)		4	0	4
Introduce the student to the different concepts of the digital circuits testing. (electronics)		4	0	4
Using pic microcontroller (electronics)		4	0	4
Obtain the knowledge of the basic operating principles of the Gunn oscillator (waves)		4	0	4
Study of the propagation characteristics in free space as well as inside the waveguide (waves)		4	0	4
2. Teaching and Learning Methods:	Lectures (N)	Practical Training/ Laboratory (Y)		Seminar/Workshop (N)
	Class Activity (N)	Case Study (N)		Projects (N)
	E-learning (N)	Assignments /Homework (N)		Other:
5. Student Assessment Methods				
5.a. Method		To assess (with reference to the ILOs)		
- Class test		b1, b2, c1, c2, c3, c4, c5, d1, d2		
- Mid-term exam		b1, b2, c1, c2, c3, c4, c5, d1, d2		
- Final Exam		b1, b2, c1, c2, c3, c4, c5, d1, d2		
5.b. Assessment Schedule		Week		
- Assessment 1; Class test		Weekly Test after each experiment		
- Assessment 2; Mid-term exam		8		
5.c. Weighting of Assessments				
- Mid-Term Examination		30 %		
- Final-term Examination		30 %		
- Semester Work		40 %		
- Total		100 %		
6. List of References				
Lab Manual				
7. Facilities Required for Teaching and Learning				
Lab equipment				
Course Coordinator:	Prof. M. Riad			
Head of Department:	Prof. Dr. Mahmoud El-Hadidi			
Date:				

