

GAU, Faculty of Engineering

Course Unit Title	Computer Hardware and Applications	
Course Unit Code	EEN440	
Type of Course Unit	Technical Elective, Electrical Engineering	
Level of Course Unit	4thYear BSc	
National Credits	3	
Number of ECTS Credits Allocated	6 ECTS	
Theoretical (hour/week)	4 (Summer School)	
Practice (hour/week)	-	
Laboratory (hour/week)	2 (Summer School)	
Year of Study	4	
Semester when the course unit is delivered	7-8	
Course Coordinator	Assoc. Prof. Dr. Kamil Dimililer	
Name of Lecturers	Assoc. Prof. Dr. Kamil Dimililer	
Name of Assistant		
Mode of Delivery	Face to Face, Laboratory Experiments, Assignments	
Language of Instruction	English	
Prerequisites and co-requisites	-	
Recommended Optional Programme Components	Digital systems, basic programming	
Objectives of the Course are,		
<ul style="list-style-type: none"> ➤ General architecture for microprocessors and microcontrollers; ➤ The relationship between hardware, memory organization and programming; ➤ The basics of Assembly Language; ➤ Programming MCU's by higher level languages 		
Learning Outcomes		
When this course has been completed the student should be able to		Assesment.
1	Write assembly codes for manipulating registers	1,2,5
2	Debug written programs on a PIC16f877A Microcontroller	5
3	Design simple microcomputers by attaching peripherals for specific tasks	1,2
4	Arrange and use I/O ports by writing appropriate programmes	1,2,5
5	Writing Pic C Programmes for the given tasks	1
Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work		
Course's Contribution to Program		
		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	2
2	Ability to design and conduct experiments as well as to analyze and interpret data	5
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	2
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	Ability to express their ideas and findings, in written and oral form	2
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	1
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	2
10	Strong foundation on the fundamentals of Electrical and Electronics Engineering such as Circuit Theory, Signals, Systems, Control and Communications, which are necessary for successful practice in the field	3
11	Awareness on the contemporary requirements, methods and applications of the Electrical and Electronics Engineering	5
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)		

Course Contents			
Week			Exams
1		Microprocessors vs. Microcontrollers, Architectures	
2		Memory Organization	
3		Assembly Language and the I/O ports	Midterm 1
4		Analog I/O, Programming,	
5		Introduction to Pic C	Midterm 2
6		Driving LCD displays and other units	
7		Using Timers and Pulse Width Modulation	
			Final

Recommended Sources

Textbook: There is not a specific textbook for CEN440 but the following documents will be useful for students:
(All of the following documents are available in the elearning page of the course)

1. Data Sheet of PIC16F87X, Microchip Technology Inc., 2001.
2. Data Sheet of PIC16F84, Microchip Technology Inc., 2001.
3. Feedback 877 Development and Training System, Student's Manual, 128-22S, 2007.

Assessment

Attendance	5%	
Assignments (4)	15%	Must be submitted via e-learning
Midterm 1	15%	Problem Solving
Midterm 2	25%	Problem Solving
Final Exam	40%	Problem Solving
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (excluding the final exam week)	7	4	28
Labs and Tutorials	7	2	14
Assignments	4	4	16
Project/Presentation/Report Writing	-	-	-
E-learning Activities	6	4	24
Quizzes	-	-	-
Midterm Examinations	2	14	28
Final Examination	1	16	16
Self Study	7	6	42
Total Workload			168
Total Workload/30 (h)			5.60
ECTS Credit of the Course			6