GAU, Faculty of Engineering

Course Unit Title	Computer Hardware and Applications
Course Unit Code	CEN440
Type of Course Unit	Technical Elective, Computer Engineering
Level of Course Unit	4thYear BSc
National Credits	3
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	2
Practice (hour/week)	-
Laboratory (hour/week)	2
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
Prerequisities and co-requisities	ENG206, ENG203
Recommended Optional Programme Components	Digital systems, C programming lagnuage

Objectives of the Course are,

- General architecture for microprocessors and microcontrollers;
- The relationship between hardware, memory ogranization and programming;
- The basics of Assembly Language;
- Programming MCU's by higher level languages

Learning Outcomes

When this course has been completed the studentshould be able to		Assesment.
1	Write assembly codes for manupulating registers	1,2,5
2	Debug written programs on a PIC16f877A Microcontroller	5,6
3	Design simple microcomputers by attaching peripherals for specific tasks	1,2,6
4	Arrange and use I/O ports by writing apropriate code	1,2,5
5	Designing hardware and preparing relevant codes in higher level languages	1

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work, 6. Oral Exam

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	5
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	4
6	Ability to use the techniques, skills and modern engineering tools necessaryfor 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	To apply fundamental concepts of software design, database design, data processing and artificial intelligence in the modeling, designing, implementing, testing and deploying software solutions.	2
11	Ability to analyse and design hardware systems by applying the principles of embedded systems, microprocessors, computer networks, distributed systems and data communication.	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	
4		Analog I/O, Programming,	Midterm
5		Introduction to Pic C	
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)	10%	Must be submitted via e-learning
Team Project	15%	
Midterm	30%	
Final Exam	40%	
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (excluding the finalexam week)	7	4	28
Labs and Tutorials	7	2	14
Assignments	4	4	16
Project/Presentation/Report Writing	1	14	14
E-learning Activities	6	4	24
Quizzes	-	-	-
Midterm Examinations	1	14	14
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