GAU, Faculty of Engineering

Course Unit Title	Microprocessors
Course Unit Code	CEN301
Type of Course Unit	Compulsory, computer engineering students
Level of Course Unit	BSc
National Credits	4
Number of ECTS Credits Allocated	7 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	3
Semester when the course unit is delivered	5
Mode of Delivery	Face to Face, Laboratory Experiments, Web
Language of Instruction	English
Prerequisities and co-requisities	Digital Systems (ENG206)
Recommended Optional Programme Components	-

Objectives of the Course

- Conceptual overview of computer hardware organisation
- Teaching adressing techniques, register and memory organisation
- Teaching instruction execution in assembly language and program coding

Learning Outcomes

When this course has been completed the student should be able to		Assesment
1	Have a good understanding of basic architecture and functionalities of microprocessors.	1
2	Create and implement algorithms with a limited command set.	1,5
3	Write programs using assembly language.	1,5
4	Explain memory segmentation and adressing clearly.	1
5	Explain details of data flow depending on main components of a PC motherboard.	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	3
2	Ability to design and conduct experiments as well as to analyze and interpret data	3
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	1
4	Ability to apply systems thinking in problem solving and system design	5
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	1
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	1
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	3
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.	2

CL (Contribution Level): 1.Very Low, 2.Low, 3.Moderate, 4.High, 5.Very High

Course Contents

Week			Exams
1		Introduction	
2		Hardware Architecture	
3		CPU Architecture	
4		Registers	
5		Memory organisation and adressing	
6		Requirements for coding in Assembly Language	
7		Fundamentals of Basic Instruction Set	Quiz
8			Midterm
9		Introduction to Assembly Language and Interrupts	
10		Simplified and conventional model	
11		Mathematical and logical operations	
12		Linking and executing assembly programs.	
13		File processes	Quiz
14		Screen Management & Macros	Lab. Exam
15			Final

Recommended Sources

Textbook: IBM PC Assembly Language and Programming, 4th Edition, P.Abel, Prentice Hall, 1998

Supplementary Material (s):- Microprocessors and Interfacing, D.V.Hall, Macmillan/McGraw Hill, 1992
- Intel Microprocessors Hardware Software and Applications, R.W.Goody, Macmillan/McGraw Hill, 1993

Assessment

Attendance	5%	
Homeworks	5%	
Laboratory	15%	Lab Grade= ((Lab Exam + Lab Performance) × Lab Attendance)
Midterm Exam	30%	Written Exam
Quiz	5%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	14	3	42
Labs and Tutorials	12	2	24
Assignments	5	4	20
Laboratory Preparation	12	0.5	6
Project/Presentation/Report Writing	-	-	-
Quizzes	2	8	16
Lab Exams	1	13	13
Midterm Examination	1	15	15
Final Examination	1	18	18
Self Study	14	3	42
Total Workload			196
Total Workload/30 (h)			6.53
ECTS Credit of the Course			7