HASAN KALYONCU UNIVERSITY
Faculty of Engineering
Course Description Form

COURSE: Microprocessors				
CODE: CENG314	**SEMESTER:** SPRING			
LANGUAGE: ENGLISH	**TYPE:** COMPULSORY			
PRE-REQUISITES: - **CO-REQUISITES:** -	**THEORY**	**PRACTICAL**	**CREDIT**	**ECTS**
WEEKLY HOURS:	3	2	4	6

CONTENT OF THE COURSE:

Topics will include microprocessor architecture and structure, with an overview of 8- 16- and 32-bit systems, assembly language programming and the use of high-level languages. Basic input/output including parallel communications with and without handshaking and serial protocols. Hardware and software timing. Using interrupts and exceptions. Overview of single-chip microprocessors and controllers The internal structure and design of peripheral devices. Memory system design and analysis. The use and structure of development tools such as (cross) assemblers or compilers, monitor programs, simulators, emulators, etc.

OBJECTIVE OF THE COURSE:

This course introduces students to small microprocessor-based systems, with an emphasis on embedded system hardware and software design. The main objective of the course are to teach:
Microprocessors and Microcomputers, Real-Mode Software Architecture of the 80386DX Microprocessors, Real-Mode Assembly Language Programming Methodology, Assembly Language Coding and Debugging, Protected-mode Software Architecture of 80386DX, Memory and I/O Interfaces of the 80386DX Microprocessors, Memory Devices, Circuits and Subsystem Design.
Explain the architecture and organization of the Processors. Design Operation Modes and States using special purpose registers. Develop programs using structures like loops and subroutines. Test the application programs with interfacing boards. Formulate interrupt programs for memory systems using different interrupt methods

WEEKLY SCHEDULE

Week	Topics
1	Introduction to microprocesoors and computer
2	Microprocessor arhitecture
3	Adressing mode and instruction set
4	Program control instructions
5	Microprocesor programing
6	Microprocesor programing
7	Memory Interface
8	Midterm
9	Input output interfaces
10	Interrupt interface
11	Direct memory access
12	Bus interface and communications
13	Arithmatic coprocessor

14	Microprocess applications and review

TEXTBOOK: M. A. Mazidi &. G. Mazidi,"The 80x86 IBM PC and Compatible Computers", Prentice Hall, 4th Ed. 2003.
REFERENCE BOOKS: Ramesh S.Goankar, "Microprocessors Arhitecture, Programming, and Applications" Merill Pub.Comp. 2nd Ed., 1989
Aditya P Mathur, "Introduction To Microprocssors" Tata McMcgraw-Hill Pub.Comp. 3rd Ed., 1989

EVALUATION SYSTEM:		
IN-TERM STUDIES	**QUANTITY**	**PERCENTAGE (%)**
Midterm Exam	1	35
Homework	0	0
Laboratory works	13	20
Quiz	0	0
Final Exam	1	45
TOTAL	15	100
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE	14	55
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE	1	45
TOTAL	15	100

COURSE CATEGORY:	**PERCENTAGE (%)**
Mathematics and Basic Sciences	10
Engineering	60
Engineering Design	30
Social Sciences	

TABLE OF ECTS / WORKLOAD:			
Activities	**QUANTITY**	**Duration (Hour)**	**Total Workload**
Course Duration	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	14	7	98
Laboratory works	13	2	26
Mid-term	1	2	2
Final examination	1	2	2
Homework	0	0	0
Quiz	0	0	0
Total Work Load			**167**
Total Work Load / 30			**5,57**
ECTS Credit of the Course			**6**

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011
LO1	1	1	1	0	2	0	0	1	0	0	1
LO2	3	3	3	0	3	0	0	2	1	1	1
LO3	1	3	1	3	2	0	2	0	0	0	1
LO4	1	1	0	0	1	0	0	0	0	0	1
LO5	1	1	0	0	1	0	0	0	0	0	1
	PO: Program Outcome | LO: Learning Outcome Value: 0: No | 1: Low | 2: Medium | 3: High										

INSTRUCTOR(S):	Asst.Prof. Dr.Ercüment Karapınar
FORM PREPARATION DATE:	23.05.2019

LEARNING OUTCOMES OF THE COURSE:	**PROGRAM OUTCOMES:**
LO1 : Solve basic binary math operations. **LO2 :** Choose an appropriate type microprocessors for practical application. **LO3 :** Analyze interface organization of microprocessor's internal and external peripherals. **LO4 :** Analyze assembly language programs for microprocessor. **LO5 :** Examine the system designing stages and distribution between hardware and software parts	**PO1:** Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems. **PO2:** Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose. **PO3:** Ability to design a complex system, process, device or product under realistic constraints and condition, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. **PO4:** Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively. **PO5:** Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions. **PO6:** Ability to work efficiently in intra-disciplinary and multidisciplinary teams; ability to work individually.

	PO7: Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions. **PO8:** Recognition of the need for lifelong learning; ability to access information, to follow developments in secience and technology, and to continue to educate him/herself. **PO9:** Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice. **PO10:** Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development. **PO11:** Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.