Department of Computer Science and Engineering, BUET

COURSE OUTLINE

Course Code : CSE315

Course Title: Microprocessors, Microcontrollers, and Embedded Systems

Level/Term : 3/1 **Section: A, B**

Academic Session : January, 2019

Course Teacher(s):

Name:	Office/Room:	E-mail and Telephone: (optional)
Md. Iftekharul Islam Sakib	418	miisakib@gmail.com +8801711375911
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Course Outline:

Introduction to 8-bit, 16-bit, and 32-bit microprocessors: architecture, addressing modes, instruction set, interrupts, multi-tasking and virtual memory; Memory interface; Bus interface; Arithmetic co-processor; Microcontrollers; Integrating microprocessor with interfacing chips; Programmable peripheral interfacing chip with interface to A/D and D/A converters; Keyboard/display interface; Programmable timer; Programmable interrupt controller, DMA controller; Introduction to embedded systems: overview of the design flow, Embedded systems specifications and modeling; Embedded hardware platforms and peripherals; Interfacing to the external world through sensors and actuators.

Learning Outcomes/Objectives:

After undergoing this course, students should be able to:

i. Analyze the differences between Intel 80x86 family members.

ii. Evaluate and apply all members of 80x86 family of microprocessors and their software and hardware interfaces.

iii. Design and develop different types of operations using microprocessors, and interfacing memory and I/O systems with the microprocessor.

iv. Create digital systems with microcontroller using various sensor and actuators.

Assessment

Class Tests/Assignments/ Projects:	20%
Attendance:	10 %
Term final :	70%

Text and Reference books:

a. Barry B Brey, The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, and Pentium Pro Processor Architechture, Programming, and Interfacing, 8th Edition

b. Douglas V Hall, Microprocessors and Interfacing Programming and hardware, 2nd Edition

c. M Rafiquzzaman, Microprocessors and Microcomputer based System Design, 2nd Edition

d. Ytha Yu, Charles Marut, Assembly Language Programming and Organization of the IBM PC

e. Muhammad Ali Mazidi, SarmadNaimi, SepehrNaimi, The avr microcontroller & embedded system, 1st Edition

f. ATmega32 Datasheet

Weekly schedule:

Week	Topics	Teacher's Initial
Week 1	Introduction and Overview	SSE, MDIIS
Week 2	Instruction Set of 8086 - Assembly Language Programming	SSE, MDIIS
Week 3	Instruction Set, Architecture of 8086 Microprocessor	SSE, MDIIS
Week 4	Introduction to Microcontrollers, General Purpose I/O of ATmega32	SSE, MDIIS
Week 5	External Interrupts in ATmega32	SSE, MDIIS
Week 6	ADC in ATmega32, Serial Communication using ATmega32	SSE, MDIIS
Week 7	Timers, Pulse Width Modulation in ATmega32	SSE, MDIIS

Week 8	More on ATmega32	SSE, MDIIS
Week 9	Embedded Systems	SSE, MDIIS
Week 10	Embedded Systems	SSE, MDIIS
Week 11	More on Internal Architecture of Microprocessors	SSE, MDIIS
Week 12	Addressing Modes of Microprocessors	SSE, MDIIS
Week 13	Interrupts and Multitasking in Microprocessors	SSE, MDIIS
Week 14	Brief Overview of Modern Microprocessors	SSE, MDIIS

Prepared by :	
Name: Md. Iftekharul Islam Sakib Signature: Date:	Name: Shadman Saqib Eusuf Signature: Date: