Varendra University

Department of Computer Science and Engineering

Program:	B. Sc. in Computer Science and Engineering
Course Code:	CSE 425
Course Title:	Microcontroller, Computer Peripherals and Interfacing
Section:	C
Semester & Session:	11th Semester, Summer 2020
Prerequisite:	CSE 121, CSE 223, CSE 231, CSE 333
Number of Credit:	3
Course Teacher:	Sumaiya Tasnim, Lecturer (Provisional), Department of CSE, VU Cell: 01799-011979 Mail: me.tasnimm@gmail.com
Lecture Hours:	1 Hour 25 Minutes, two theoretical lectures per week
Textbook:	The AVR Microcontroller and Embedded Systems using Assembly and C by M.A. Mazidi, S. Naimi
Reference books:	1. C Programming for Embedded Microcontrollers by Warwick A. Smith 2. Microcontroller& Embedded Systems by M. A. Mazidi 3. Microcomputer Interfacing by Artwick

Marks Distribution: (Tentative)	Final Exam (Case Study + Presentation + Viva)	40%
	Mid-Term Exam (Case Study + Presentation + Viva)	30%
	Assignment	10%
	Regular Assessment	10%

	Attendance			10%
Exam dates: **(Tentative)**		**Start**	**End**	
	Assignment			
	Mid-Term	9.08.2020	12.08.2020	
	Final	21.09.2020	27.09.2020	
Grading:	**Numerical Grade**		**Letter Grade**	**Grade point**
	80% and above		A+	4
	75% to less than 80%		A	3.75
	70% to less than 75%		A-	3.5
	65% to less than 70%		B+	3.25
	60% to less than 65%		B	3
	55% to less than 60%		B-	2.75
	50% to less than 55%		C+	2.5
	45% to less than 50%		C	2.25
	40% to less than 45%		D	2
	Less than 40%		F	0

CSE 425: Microcontroller, Computer Peripherals and Interfacing

CO	Description	PO	Taxonomy domain/level	Delivery Methods	Assessment tools
CO1	Illustrate the brief concepts of microcontroller, microcomputer and embedded system.	PO1	Cognitive/ Understand	Lectures	Quiz
CO2	Describe the interfacing techniques of memory and I/O with microprocessor.	PO1	Cognitive/ Understand	Lectures	Assignment
CO3	Use the programmable device to connect the peripherals with processor.	PO2	Cognitive/ Apply	Lectures	Final Exam

CO4	Discuss the data communication technique with serial I/O	PO1	Cognitive/ Understand	Lectures	Final Exam

Lecture Plan:

Date(Tentative)	No. of Lecture	Topics	Course Material
02.07.2020	Lecture-01	Course Introduction and overview, A brief discussion on Microcontroller and Embedded system	Slide: Lecture1
05.07.2020	Lecture-02	Computing overview: Numbering and Coding system, digital primer, CPU architecture	Slide: Lecture 2 Book: Chapter-0
09.07.2020	Lecture-03	AVR microcontroller: history, features, overview of AVR family, embedded systems	Slide: Lecture 3 Book: Chapter-1
12.07.2020	Lecture-04	AVR architecture: general purpose registers, data memory, status register, introduction to AVR assembly programming, RISC architecture in AVR	Slide: Lecture 4 Book: Chapter-2
16.07.2020	Lecture-05	AVR I/O port programming: port programming, bit manipulation	Slide: Lecture 5 Book: Chapter-4
19.07.2020	Lecture-06	AVR programming in C: data types, time delays, I/O programming, logic operation, data conversion, memory allocation	Slide: Lecture 6 Book: Chapter-7
23.07.2020	Lecture-07	AVR hardware connection: pin connection, fuse bits, hex files for AVR	Slide: Lecture 7 Book: Chapter-8
26.07.2020	Lecture-08	Review class over lecture 1-7	
30.07.2020	Lecture-09	AVR Timer and timer programming in C	Slide: Lecture 8 Book: Chapter-9
02.08.2020	Lecture-10	AVR Interrupt : priority and programming	Slide: Lecture 9 Book: Chapter-10
06.08.2020	Lecture-11	AVR serial port programming in C: basics of serial communication	Slide: Lecture 10 Book: Chapter-11

13.08.2020	Lecture-12	LCD, Keyboard interfacing	Slide: Lecture 11 Book: Chapter-12
16.08.2020	Lecture-13	ADC, DAC, Sensor Interfacing	Slide: Lecture 12 Book: Chapter-13
20.08.2020	Lecture-14	Relay, stepper motor Interfacing	Slide: Lecture: 13 Book: Chapter-14
23.08.2020	Lecture-15	PWM programming, DC motor control	Slide: Lecture 14 Book: Chapter-16
27.08.2020	Lecture-16	Review class over Lecture 9-15	
30.08.2020	Lecture-17	Input capture and wave generation	Slide: Lecture 15 Book: Chapter-15
03.09.2020	Lecture-18	SPI Protocol , display interfacing	Slide: Lecture 16 Book: Chapter-17
06.09.2020	Lecture-19	I2C Protocol, DS1307 RTC interfacing	Slide: Lecture 17 Book: Chapter-18
10.09.2020	Lecture-20	Electronic Basic overview-1	Slide: Lecture 18
13.09.2020	Lecture-21	Electronic Basic overview-2	Slide: Lecture 19
17.09.2020	Lecture-22	Review class over Lecture 17-21	

General Instruction

1. Class attendance is mandatory.
2. Class Assignment will be provided at due time before the midterm exam and final exam. Assignment must be submitted before due date on MS Team. No assignment will be counted for marks/points after the due date.