COURSE OUTLINE

1	Faculty	Faculty of Science and Engineering (FSE)
2	Department	Computer Science and Engineering
3	Programme	B.Sc. in CSE
4	Name of Course	Microprocessors and Microcontrollers
5	Course Code	CSE 303
6	Trimester	Fall 2020
7	Pre-requisites	CSE 203
8	Status	Core Course
9	Credit Hours	3
10	Section	183 DA

11	Class Hours	Section	Class Day	Class Hours	Venue
		183 DA	Tuesday Thursday	10:00 – 11:30 AM	B-409

12	Class Location	B-409
13	Course website	https://classroom.google.com/c/MTgyNjg3OTg4MzQw Google Class Code: pr64ytp
14	Instructor	Syed Ahsanul Kabir
15	Contact	kabir@cse.green.edu.bd
16	Office	Room No: B-513

17	Counselling Hours	Day	Counseling Hours	Venue
		Monday	10:00 AM – 1:00 PM	Room No B-513
		Wednesday	10:00 AM – 1:00 PM	Room No B-513

18	Text Book	Douglas V Hall – Microprocessors and Interfacing, 3rd Edition, Tata Mcgraw Hill, 2019-2020
19	Reference	Barry B. Brey (2009), The Intel Microprocessors, Eighth Edition. Prentice Hall Godse (2007-2008), Microprocessor and Microcontroller System, First Edition, Technical Publications.

20	**Equipment & Aids**	Keep your own materials *(calculator, pen, paper, etc.)* to participate effectively in classroom activities. *Besides class note, please keep at least one blank A4 size paper per class with you.*
21	**Course Rationale**	The **purpose** of this **course** is to teach students the fundamentals of **microprocessor and microcontroller** systems. The student will be able to incorporate these concepts into their electronic designs for other **courses** where control can be achieved via a **microprocessor**/controller implementation. Microprocessor is the course used to provide an understanding of microprocessor hardware and software. Students completing this course will work with microprocessor-based equipment, and be capable of distinguishing hardware from software faults. The superior students will also be capable of participating in product development efforts, including support and development of assembly language code.
22	**Course Description**	Microprocessor: microcontroller & microcomputer, evaluation of microprocessor & application, introduction to 8-bit, 16-bit, and 32-bit microprocessors; addressing modes: absolute addressing, 8086 internal architecture, PIN diagram of 8086, Max-Min mode, register structure; memory read write cycle; Instruction set; pipeline concept: interrupts, programmed I/O, memory mapped I/O, interrupt driven I/O, direct memory access; block transfer; cycle stealing; interleaved; multi-tasking and virtual memory; memory interface; bus interface; arithmetic co-processor; assembly language programming of 8086 microprocessors.
23	**Course Outcomes (CO)**	Upon successful completion of this course, students will be able to - **CO1:** Analyze microprocessor building blocks, circuits and I/O devices. **CO2:** Interconnect digital circuits to a microprocessor. **CO3:** Formulate appropriate computing solution for processor or controller-based application.
24	**Teaching Methods**	Maximum topics will be covered from the textbook. For the rest of the topics, reference books will be followed. Some class notes will be uploaded on the web. White board will be used for most of the time. For some cases, multimedia projector will be used for the convenience of the students. Students must participate in classroom discussions for case studies, assignments, presentations and small group works.

25	**Topic Outline**				
	All topics and problems are from the main text if not specified otherwise.				
	Lecture	**Selected Topics**	**Article (Text)**	**Suggested Problems**	**Outcome**
	(1-2)	Microcontroller & microcomputer, evaluation of microprocessor & application	1.2, 1.5, 1.6, 1.8, 1.10, 1.12	Problem solving in the class	CO1
	(2-3)	introduction to 8-bit, 16-bit, and 32-bit microprocessors	2.1, 2.3, 2.7	Problem solving in the class	CO1
	(4-5)	addressing modes: absolute addressing	2.15	Problem solving in the class	CO1
	(6-7)	8086 internal architecture, PIN diagram of 8086	2.7, 2.10	Problem solving in the class	CO1
	(8-9)	Max-Min mode, register structure	2.3 (R2)	Problem solving in the class	CO2
	(10-12)	memory read write cycle, Instruction set	2.4, 2.5	Problem solving in the class	CO2
	(13-14)	pipeline concept: interrupts	2.11, 2.12	Problem solving in the class	CO2
	(15-16)	programmed I/O, memory mapped I/O, interrupt driven I/O, direct memory access	9.2, 9.3, 9.8, 9.46	Problem solving in the class	CO3
	(17-18)	block transfer; cycle stealing	10.7 (R1)	Problem solving in the class	CO3
	(19-20)	interleaved; multi-tasking and virtual memory	15.2	Problem solving in the class	CO3
	(21-22)	memory interface; bus interface; arithmetic co-processor	6.4 (R2), 10.3 (R1)	Problem solving in the class	CO3
	(23-24)	assembly language programming of 8086 microprocessors	3.9, 3.11, 3.17	Problem solving in the class	CO3

26	**Assessment and Marks Distribution:**	Students will be assessed on the basis of their overall performance in all the exams, quizzes, and class participation. Final numeric reward will be the compilation of (tentative): ❖ Class Attendance (5%) ❖ Individual Presentation (5%) ❖ Assignment (5%) ❖ Class Test (15%) ❖ Mid Term (30%) ❖ Final Exam (40%)

27	**Assessment Methods of COs**	Assessment methods of COs are given below:

		Assessment						
COs	CT1	CT2	CT3	MT	FE	Individual Presentation	Assignment
CO1	√			√		√	√
CO2		√		√	√	√	√
CO3			√		√	√	√

28	**Mapping of COs with POs**	Mapping of COs with program outcomes (POs) are given below:

	Program Outcomes (POs)											
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	√	√										
CO2	√		√	√								
CO3	√	√	√		√							

29	**Grading Policy**	The following chart will be followed for grading. This has been customized from the guideline provided by the Faculty of Science and Engineering.

A+	A	A-	B+	B	B-	C+	C	D	F
80 and above	75-<80	70-<75	65-<70	60-<65	55-<60	50-<55	45-<50	40-<45	<40

29	**Additional Course Policies**	Assignment: No late submission will be accepted. Zero tolerance will be shown in this regard. Class Test: There will be three CTs, best of two will be counted. A CT can be taken with an announcement in prior or without any announcement. Exams: Mid-term and final exam will be closed book, closed notes. Mobile is strictly prohibited in exam hall. Please bring your own watch and synchronize time during exam hours. Test Policy: If you are absent from a test, and you have not spoken to the teacher personally beforehand, your grade for the test will be zero. No make-up for class test will be taken because it has alternative (two out of three). No make-up for mid will be entertained without presence and recommendation of guardian and written permission of the department. Make-up test of mid will be much harder than the regular test.

30	**Additional Information**	a. Academic Calendar Fall 2020: http://www.green.edu.bd/academics/academic-calendar/ b. Academic Information and Policies: http://www.green.edu.bd/academics/academic-rules-regulations/ c. Grading and Performance Evaluation: http://www.green.edu.bd/academics/academic-rules-regulations/ d. Proctorial Rules: http://www.green.edu.bd/administration/offices/office-of-the-proctor/