

University of Asia Pacific (UAP)
Department of Computer Science and Engineering (CSE)

Course Outline

Program:	Computer Science and Engineering (CSE)
Course Title:	Microprocessors and Assembly Language Lab
Course Code:	CSE 312
Semester:	Fall-2020
Level:	5 th Semester
Credit Hour:	1.5
Name & Designation of Teacher:	Shaila Rahman, Assistant Professor
Office/Room:	7th Floor
Class Hours:	Saturday: A2 (2:00PM- 4:50PM) Sunday: B1 (2.00PM - 4.50PM) Wednesday: B2 (2:00PM – 4:50PM) Thursday: A1 (2:00PM – 4:50 PM)
Consultation Hours:	
E-mail:	Shaila@uap-bd.edu
Mobile:	+8801819818234
Rationale:	Required course in the CSE program
Pre-requisite (if any):	None

Course Synopsis:

Basics of Microprocessor and Assembly Language, Introduction to assembly language, Processor Status and Flags Register, Flow Control Instructions, Logic, Shift, Rotate, Multiplication and Division Instruction, Stack and Introduction to Procedures, Recursion, Arrays and Addressing Modes, String Instructions.

Course Objective:

The objectives of this course are to:

1. **Introduce** the basic of microprocessor elements of 8086.
2. **Introduce** the basic of 8086 Assembly Language and its instruction set.
3. **Introduce** 8086 Emulator to solve and evaluate the result.

Course Outcomes (CO) and their mapping with Program outcomes (PO) and Teaching-Learning Assessment methods:

CO No.	CO Statements: Upon successful completion of the course, students should be able to:	Corresponding POs (Appendix-1)	Bloom's taxonomy domain/ level (Appendix-2)	Delivery methods and activities	Assessment Tools
CO1	Describe Low level /Mid-level machine specific language and their importance, 8086 Assembly language, Basics of 8086 Microprocessor.	1	1/Understand	Lecture, multimedia	Written exam
CO2	Use 8086 Instruction Set and write assembly language program.	3	1/Apply	Lecture, Problem Solving	Programming test, Short Quizzes, Oral exam, Written exam
CO3	Solve problems using Assembly language	2	1/Create	Lecture, multimedia	Lab test, Short Quizzes, Oral exam, Written exam
CO4	Evaluate problems Emulator of 8086 (EMU8086).	5	1/Evaluate	Lecture, multimedia	Lab test

Weighting COs with Assessment methods:

Assessment Type	% weight	CO1	CO2	CO3	CO4
Final Term: Written Exam, Oral Exam	30%	10	10	10	0
Mid Term: Written Exam, Oral Exam	20%	10	10	0	0
Continuous Evaluation: Class Performance, Short Quizzes, Programming Test, Oral Exams, Lab test	50%	10	30	0	10
Total	100%	30	50	10	10

Course Content Outline and mapping with COs

Weeks	Topics / Content	Course Outcome	Delivery methods and activities	Reading Materials
1	Introduction	CO1	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 1,2
2	Basics of Microprocessor and Assembly Language	CO1	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 3
3	Introduction to assembly language, Processor Status and Flags Register	CO1,CO2,CO4	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 4, 5
4	Flow Control Instructions, Code Demo, Assigning Offline, Assignment Checking	CO1,CO2, CO4	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 6
5	Logic, Shift, Rotate, Multiplication and Division Instruction, Assigning Offline	CO1,CO2, CO4	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 7,9
6	Test on Previous classes	CO2, CO4		
7	Stack and Introduction to Procedures, Recursion, Assigning Offline.	CO1,CO2, CO4	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 8, 17
8	Mid Exam			
9	Evaluation of Offline, Online			
10	Arrays and Addressing Modes, String Instructions	CO1,CO2, CO4	Lecture, multimedia	Slides, Assembly Language Programming and Organization of the IBM PC: Chapter 10,11
11	Evaluation of Offline, Online	CO2, CO4		

12	Introduce with various types of microprocessor	CO1,CO4	Lecture, multimedia	Provided Slides, The Intel Microprocessors <i>by Barry B. Brey</i>
13	Interfacing 8086 with external devices	CO3, CO4	Lecture, multimedia	Provided Slides, The Intel Microprocessors <i>by Barry B. Brey</i>
14	Final Exam			

Minimum attendance: 70% class attendance is mandatory for a student in order to appear at the final examination.

Textbook: Assembly Language Programming and Organization of the IBM PC, Ytha Yu and Charles Marut
Intel Microprocessors, Barry B Brey

Grading System: As per the approved grading scale of University of Asia Pacific (Appendix-3).

Special Instructions: **Late attendance:** Students who will enter the class after the attendance call will be marked as absent.
Assignment: Unfinished work should be submitted as assignment. **Additional** assignments may be given as needed. Copied home work will be graded as zero. Late submission will result a 50% deduction in score.

Student's responsibilities: Students must come to the class prepared for the course material covered in the previous class (es).
They must submit their assignments on time.

Prepared by (Course Teacher)	Checked by (Chairman, PSAC committee)	Approved by (Head of the Department)

Appendix-1:**Washington Accord Program Outcomes (PO) for engineering programs:**

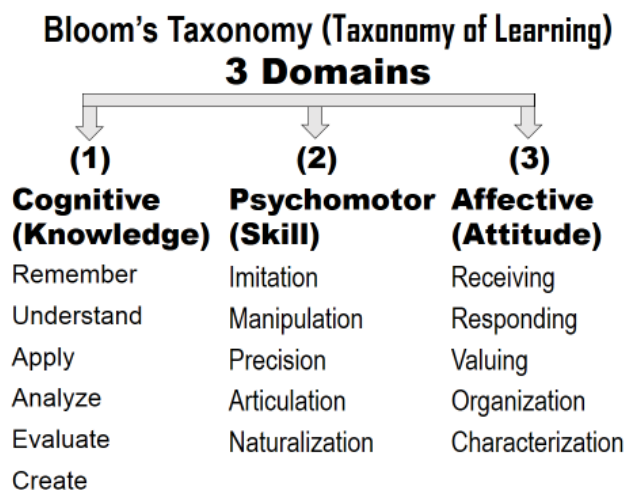
No.	PO	Differentiating Characteristic
1	Engineering Knowledge	Breadth and depth of education and type of knowledge, both theoretical and practical
2	Problem Analysis	Complexity of analysis
3	Design/ development of solutions	Breadth and uniqueness of engineering problems i.e. the extent to which problems are original and to which solutions have previously been identified or codified
4	Investigation	Breadth and depth of investigation and experimentation
5	Modern Tool Usage	Level of understanding of the appropriateness of the tool
6	The Engineer and Society	Level of knowledge and responsibility
7	Environment and Sustainability	Type of solutions.
8	Ethics	Understanding and level of practice
9	Individual and Team work	Role in and diversity of team
10	Communication	Level of communication according to type of activities performed
11	Project Management and Finance	Level of management required for differing types of activity
12	Lifelong learning	Preparation for and depth of Continuing learning.

Generic Skills (Detailed):

1. **Engineering Knowledge (T)** -Apply knowledge of mathematics, sciences, engineering fundamentals and manufacturing engineering to the solution of complex engineering problems;
2. **Problem Analysis (T)** – Identify, formulate, research relevant literature and analyze complex engineering problems, and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;
3. **Design/Development of Solutions (A)** –Design solutions, exhibiting innovativeness, for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues.
4. **Investigation (D)** Conduct investigation into complex problems, displaying creativeness, using research-based knowledge, and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
5. **Modern Tool Usage (A & D)** -Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations;
6. **The Engineer and Society (ESSE)** -Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices.
7. **Environment and Sustainability (ESSE)** -Understand the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development;

8. **Ethics (ESSE)** –Apply professional ethics with Islamic values and commit to responsibilities and norms of professional engineering code of practices.
9. **Communication (S)** -Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions;
10. **Individual and Team Work (S)** -Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
11. **Life Long Learning (S)** -Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
12. **Project Management and Finance (S)** -Demonstrate knowledge and understanding of engineering management and financial principles and apply these to one's own work, as a member and/or leader in a team, to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship.

Appendix-2



Appendix-3

UAP Grading Policy:

Numeric Grade	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00