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

Course Outline

Program:	Computer Science and Engineering (CSE)
Course Title:	Software Development
Course Code:	CSE 410
Semester:	Spring-2021
Level:	7th Semester
Credit Hour:	1.5
Name & Designation of Teacher:	Hasan Murad, Lecturer, Fahad Ahmed, Lecturer
Office/Room:	Online
Class Hours:	
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Rationale:	Required course in the CSE program
Pre-requisite (if any)**:**	**CSE 321 (Software Engineering)**

Course Synopsis:
Basics of writing and presenting s/w project proposal, Requirement analysis, Different UML diagrams, Introducing with different popular and powerful s/w development frameworks, Development phase, s/w testing, s/w deployment.

Course Objective: The objectives of this course are to:
1. **Introduce** appropriate project proposal writing method and requirement analysis technique.
2. **Teach** different UML diagrams and S/W testing methods.
3. **Introduce** different S/W development frameworks.

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	**Identify, formulate, and analyse** a real world problem based on requirement analysis.	2	1/Analyze	Lecture, multimedia	Presentation on project idea, CEP Mapping
CO2	**Design/Develop** a working solution on a real world problem using s/w designing tools.	3	1/Apply	Lecture, multimedia	Continuous Project Evaluation(UML, ERD, Code Review), Report
CO3	**Use** modern development tools which are popular among s/w developers.	5	1/Apply	Lecture, multimedia	Continuous Project Evaluation
CO4	**Identify** societal, health, safety, legal and cultural issues related to the project.	6	1/Analyze	Lecture, multimedia	Presentation on project idea, Project Report, Viva
CO5	**Practice** professional ethics and responsibilities and norms of engineering practice.	8	3/Valuing	Lecture, multimedia	Project Report, Viva
CO6	**Work** as a team and fulfil individual responsibility.	9	1/Apply	Lecture, multimedia	Continuous Project Evaluation, Viva
CO7	**Communicate** effectively through presentation and **write** effective reports and documentations on the project.	10	1/Apply	Lecture, multimedia	Presentation, Project Report, Viva
CO8	**Apply** project management principles using Version Control System, and **produce** cost value analysis.	11	1/Apply	Lecture, multimedia	Presentation on project idea, Project Report
CO9	**Recognize** the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of requirement changes and introduction	12	1/Apply	Lecture, multimedia	Report, Viva

	of modern development tools					
CO10	**Apply** the S/W Engineering knowledge to provide a working solution on a real world problem	1	1/Apply	Lecture, multimedia	Continuous Project Evaluation

Weighting COs with Assessment methods:

Assessment Type	% weight	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	CO 7	CO 8	CO 9	CO 10
Presentation (Presentation)	20%	10			5			5			
Report and CEP Mapping (Project)	30%	5	5		3	5		2	5	5	
Viva (Viva)	20%				2	5	5	3		5	
Continuous Project Evaluation (Assessment)	30%		10	5			5		5		5
Total	100%	15	15	5	10	10	10	10	10	10	5

Course Content Outline and mapping with COs

Weeks	Topics / Content	Course Outcome	Delivery methods and activities	Reading Materials
1	Introduction to s/w development and team formation		Lecture, multimedia	Slides
2	Presentation on project proposal	CO1,CO4, CO7,CO8		

3	Continue presentation on project proposal and Introduction to UML diagram	CO1,CO4, CO7,CO8	Lecture, multimedia	Slides
4	UML diagram evaluation and Introduction to DB design using ER diagram	CO2,CO7,CO 10	Lecture, multimedia	Slides
5	DB design evaluation	CO2,CO7,CO 10		
6	Discussion on different development frameworks, their advantages and disadvantages.	CO3	Lecture, multimedia	Slides
7-8	1st Phase Project Update	CO3,CO5, CO6,CO7, CO8,CO10		
9-10	2nd Phase Project Update	CO3,CO5, CO6,CO7, CO8, CO10		
11-12	Final Project Update	CO3,CO5, CO6,CO7, CO8,CO9,CO 10		
13	Final Presentation	CO1,CO2, CO4,CO7, CO9		
14	Project Report	CO4,CO5, CO7,C08		

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

Textbook: **No textbook required.**

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 homework will be graded as zero. Late submission will result in 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)
Hasan Murad (HMD) Fahad Ahmed (FMD)	PSAC	

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

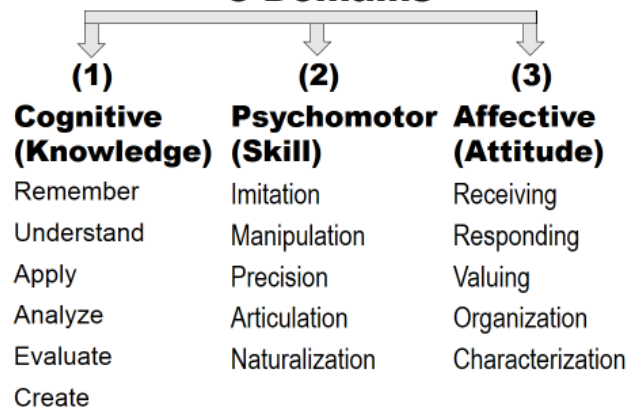| No.	PO	Differentiating Characteristic
1	Engineering Knowledge	Breadth and depth of education and type of knowledge, both theoretical and practical
2	Problem Analysis	Complexity of analysis
3	Design/ development of solutions	Breadth and uniqueness of engineering problems i.e. the extent to which problems 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

Bloom's Taxonomy (Taxonomy of Learning)
3 Domains

(1) Cognitive (Knowledge)	(2) Psychomotor (Skill)	(3) Affective (Attitude)
Remember	Imitation	Receiving
Understand	Manipulation	Responding
Apply	Precision	Valuing
Analyze	Articulation	Organization
Evaluate	Naturalization	Characterization
Create		

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