

# Bangladesh University of Business & Technology (BUBT)

## Department of Computer Science and Engineering (CSE)



### Sessional Course Outline

Program	: B.Sc. Engineering in CSE
Course Code	: CSE 328
Course Title	: Software Engineering Lab
Course Credit	: 0.75
Contact Hours	: 1.5 hrs.
Semester	: Fall 2020-21
Intake	: 39 <sup>th</sup>
Section	: 01

## 1. Course Objectives

This lab course is based on ‘CSE 327: Software Engineering’ theory course. In this lab course, students will learn the practical aspects of requirement gathering, requirement elicitation, software planning, software designing, software implementation and software testing. In this lab, students will solve a real-world software engineering problem from requirement engineering to software testing as a team.

## 2. Course Outcomes

Upon successful completion of this course, students should be able to:

<b>CO1</b>	<b>Demonstrate</b> software engineering design and development tools.
<b>CO2</b>	Analyze and <b>design</b> the software with appropriate modeling process using UML diagram, UI design (front-end design), Database design (back-end design) and Software testing.
<b>CO3</b>	<b>Develop</b> and test the software to implement a real-world problem.

## 3. Mapping of Course Outcomes (COs) to Program Outcomes (POs)

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>CO1</b>	√											
<b>CO2</b>			√									
<b>CO3</b>									√			

Sl. No.	Cos	Corresponding POs	Bloom's taxonomy domain/level	Delivery methods and activities	Assessment tools
<b>CSE-328</b>					
<i>CO1</i>	<b>Demonstrate</b> software engineering, design and development tools.	<i>PO1</i>	C: Understand	<i>Lab Demonstration, Lab Task</i>	<i>Lab Performance</i>
<i>CO2</i>	Analyze and <b>design</b> the software with appropriate modeling process using UML diagram ,UI design (front-end design), Database design (back-end design) and	<i>PO3</i>	A: Respond	<i>Lab Instruction, Lab Task</i>	<i>Lab Performance</i>

	Software testing.				
CO3	<b>Develop</b> and test the software to implement a real-world problem.	PO9	P: Guided Response	<i>Project Supervision</i>	<i>Final Project Evaluation</i>

#### 4. Descriptions of Program Outcomes (POs)

PO1	<b>Engineering Knowledge (Cognitive):</b> Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	<b>Problem Analysis (Cognitive):</b> Identify, formulate, research the literature and analyze complex engineering problems and reach substantiated conclusions using first principles of mathematics, the natural sciences and the engineering sciences.
PO3	<b>Design/Development of Solutions (Cognitive, Affective):</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety as well as cultural, societal and environmental concerns.
PO4	<b>Investigation (Cognitive, Psychomotor):</b> Conduct investigations of complex problems, considering design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO5	<b>Modern Tool Usage (Psychomotor, Cognitive):</b> Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	<b>The Engineer and Society (Affective):</b> Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO7	<b>Environment and Sustainability (Affective, Cognitive):</b> Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
PO8	<b>Ethics (Affective):</b> Apply ethical principles and commit to professional ethics, responsibilities and the norms of the engineering practice.
PO9	<b>Individual Work and Teamwork (Psychomotor, Affective):</b> Function effectively as an individual and as a member or leader of diverse teams as well as in multidisciplinary settings.
PO10	<b>Communication (Psychomotor, Affective):</b> Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.
PO11	<b>Project Management and Finance (Cognitive, Psychomotor):</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member or a leader of a team to manage projects in multidisciplinary environments.
PO12	<b>Life-Long Learning (Affective, Psychomotor):</b> Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological change.

## 5. Requirements

The following requirements are needed for conducting this lab course:

- Drawing Tools: Microsoft Visio, Pencil, Gliffy etc.
- Documentation Tools: Microsoft Word, Latex
- Presentation Tools: Microsoft Power Point
- Database Management Software: XAMPP etc.
- Framework: Laravel for PHP

## 6. Course Evaluation

Class Attendance	:	10%	Grades			
			Numerical Grade	Letter Grade		Grade Point
Lab Assignment	:	20%	80% and above	A+	(A Plus)	4.00
			75% to less than 80%	A	(A Regular)	3.75
Lab Performance	:	30%	70% to less than 75%	A-	(A Minus)	3.50
			65% to less than 70%	B+	(B Plus)	3.25
Final Project Evaluation	:	40%	60% to less than 65%	B	(B Regular)	3.00
			55% to less than 60%	B-	(B Minus)	2.75
			50% to less than 55%	C+	(C Plus)	2.50
			45% to less than 50%	C	(C Regular)	2.25
			40% to less than 45%	D		2.00
			Less than 40%	F		0.00

## 7. Weekly Schedule

Week	Lab	Topics	CO
Week1	Lab1	<b>Introduction to Software Development Tools:</b> UML Diagram, Script Language, Framework Management	
Week2	Lab2	<b>Project Selection:</b> Project Idea Submission, Software Development Approach Selection <b>Lab performance evaluation</b>	CO1
Week3	Lab3	<b>Requirement Engineering and Framework Assessment:</b> Discussion with stakeholder, conducting interview, requirement gathering, demonstrate framework management by students. <b>Lab performance evaluation</b>	CO1
Week4	Lab4	<b>Project Proposal Presentation:</b> Presentation on Project Proposal	
Week5	Lab5	<b>UML &amp; ER Diagram Design:</b> Necessary UML diagrams, Entity Relationship Diagram, Normalization of database <b>Lab performance evaluation</b>	CO2
Week6	Lab6	<b>UI Design:</b> Front-End Design	

Week7	Midterm Examination Week		
Week8	Lab7	<b>UI Design Assessment:</b> Front-End Evaluation	
Week9	Lab8	<b>Software Construction and Implementation:</b> Back-End Evaluation (Part-I) <b>Lab performance evaluation</b>	CO2
Week10	Lab9	<b>Software Construction and Implementation:</b> Back-End Evaluation (Part-II) <b>Lab performance evaluation</b>	CO2
Week11	Lab10	<b>Final Report Writing and Presentation Guidelines:</b> Report documentation, representing final project presentation slide	
Week12	Lab11	<b>Software Testing:</b> Front-End Testing (UI design, user data entry), Back-End Testing (Database design, modelling, retrieving data from database, showing output to display) <b>Lab performance evaluation</b>	CO2
Week13	Lab12	<b>Final Project Evaluation (Session - I)</b>	CO3
Week14	Lab13	<b>Final Project Evaluation (Session - II)</b>	CO3
Week15	Final Examination		

## 8. Overall CO Assessment Scheme/Rubric

Assessment Area	Assessment Area Mark			
	CO1	CO2	CO3	
Attendance				
Lab Assignment				
Lab Performance	10	20		<b>30</b>
Project Evaluation			40	<b>40</b>
<b>Total</b>	<b>10</b>	<b>20</b>	<b>40</b>	<b>70</b>

### Assessment Details:

Rubrics for Lab performance: 30 marks

Lab		CO	5(Excellent)	4(Good)	3(Satisfactory)	0-2 (Inadequate)	Marks
	Criteria		Student demonstrates an accurate understanding of the lab	Student arrives on time to lab, but may be unprepared. Answers to	Student tardiness or unpreparedness makes it	Student was absent from lab or did not participate.	

			objectives and concepts. The student can correctly answer questions and if appropriate, can explain concepts to the course teacher.	questions are basic and superficial suggesting that concepts are not fully grasped.	impossible to fully participate. If able to participate, student has difficulty explaining key lab concepts.	There was no attempt to make prior arrangements to make up the lab.	
L2	Project Idea Submission, Software Development Approach Selection	CO1	”	”	”	”	05
L3	Discussion with stakeholder, conducting interview, requirement gathering, demonstrate framework management by students.	CO1	”	”	”	”	05
L5	Necessary UML diagrams, Entity Relationship Diagram, Normalization of database	CO2	”	”	”	”	05
L8	Back-End Evaluation (Part-I)	CO2	”	”	”	”	05

L9	Back-End Evaluation (Part-II)	CO2	”	”	”	”	05
L11	Front-End Testing (UI design, user data entry), Back-End Testing (Database design, modelling, retrieving data from database, showing output to display)	CO2	”	”	”	”	05

Rubrics for Project Evaluation: 40 marks

CO3	Project Evaluation				
Criteria	5 (Excellent)	4 (Good)	3 (Satisfactory)	0-2 (Inadequate)	Marks
Requirement Engineering	Students can apply all the steps of requirement engineering appropriately in the project.	Students can apply all the steps of requirement engineering mostly, but have some deficiencies.	Students can apply a few steps of requirement engineering and have many deficiencies.	Students can not apply any steps of requirement engineering properly.	10
Software development skill	Student applies software development skills properly	Student applies software development skills mostly, but have some irregularities	Student applies some software development skills but have many irregularities	Student has no or insufficient idea about software development skills	10
Project Report	Student has the complete understanding of	Student has a basic knowledge of content, but may lack some	Student has lack of knowledge about project and the report.	Student either did not submit the report or	10

	the project and the report. The report is appropriate formatted.	understanding of some concepts. The report is appropriate formatted with some irregularities although no portion of the content is copied	There are multiple errors in content and format.	the report is so incomplete and inaccurate that it is unacceptable.	
Presentation & Viva	Student delivers presentation appropriately and student can correctly answer questions.	Student seems unprepared in the presentation but can share his knowledge appropriately and student can moderately answer questions and if not fully appropriate, can explain concepts to the course teacher.	Student expresses his lack of knowledge in the presentation and student can answer a small portion of the questions.	Student is absent or cannot deliver presentation and students were either absent or cannot correctly answer questions.	10

## 9. Reference Materials

1. Software Engineering, 9<sup>th</sup> Edition, By Ian Sommerville
2. Software Engineering: A practitioner's approach, 8<sup>th</sup> Edition, By Roger. S. Pressman.

## 10. Instructor Information

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## 11. Class Schedule

Day	Time	Room No
Thursday	11:30 AM – 12.50 PM	B2/419

## 12. Office Hours

Day	8:30 a.m. - 9:50 a.m.	10:00 a.m. – 11:20 a.m.	11:30 a.m. – 12:50 p.m.	1:20 p.m. – 2:40 p.m.	2:50 p.m.- 4:10 p.m.	6:00 p.m. – 7:30 p.m.	7:30 p.m.- 9.00 p.m.
Sun			C.H.	C.H.	C.H.		



Mon	C.H.						
Tue	C.H.		C.H.		C.H.		
Thu	C.H.	C.H.			C.H.		
Fri							

**Prepared by:**

**Checked by:**

**Approved by:**

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