



Web Engineering

Course Code:	CS344	Semester:	5 th
Credit Hours:	3+1	Prerequisite Codes:	CS212 Object Oriented Programming
Instructor:	Mr. Mohsin Ikram	Class:	BE(SE)-5 AB
Office:	-	Telephone:	-
Lecture Days:	-	E-mail:	mohsin.ikram@seecs.edu.pk
Class Room:	CR-06	Consulting Hours:	On prior email Request
Lab Engineer:	Ahsan Gul	Lab Engineer Email:	-
Knowledge Group:	Programming	Updates on LMS:	-

Course Description:

The focus of this course is to provide students with the fundamental concepts necessary to better engineer web applications. The course covers fundamental concepts behind Web engineering, approaches in web usability and web application testing, and technologies supporting Web engineering.

Course Objectives:

The students are expected to achieve the following:

1. Understand about World Wide Web & Internet
2. Will be able to develop web sites and applications
3. Will be able to understand, design and develop techniques for building web applications
4. Will be able to learn techniques and use them to ensure proper operability, and functioning of a web application

Course Learning Outcomes (CLOs):

Upon completion of the course, it is expected that you will be able to:	PLO	BT Level*
1. Describe the concepts relating to World Wide Web	1	C-1
2. Use design and development techniques for developing user centric and/or data-driven web applications	3	C-3
3. Analyze implementation strategies provided by various modern frameworks for creating user centric applications.	4	C-4
4. Develop Static and Dynamic websites and applications using modern tools and frameworks	5	C-6
* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain Remembering (C-1), Understanding (C-2), Applying (C-3), Analyzing (C-4), Evaluating (C-5), Creating (C-6)		



Mapping of Course Learning Outcomes (CLOs) to ABET Student Outcomes (SOs)				
SOs/CLOs	CLO1	CLO2	CLO3	CLO4
PLO 1 (Engineering Knowledge)	X			
PLO 2 (Problem Analysis)				
PLO 3 (Design/Development of Solutions)			X	
PLO 4 (Investigation)				X
PLO 5 (Modern tool usage)		X		
PLO 6 (The Engineer and Society)				
PLO 7 (Environment and Sustainability)				
PLO 8 (Ethics)				
PLO 9 (Individual and Team Work)				
PLO 10 (Communication)				
PLO 11 (Project Management)				
PLO 12 (Lifelong Learning)				

Grading Criteria (In accordance with the NUST statutes)	
Assessments	Details
Theory: 75 %	Quizzes: 10 %
	Assignments: 10 %
	OHT-1: 15 %
	OHT-2: 15 %
	End Semester Exam: 50 %
Labs: 25 %	Lab Tasks and Viva: 75%
	Project: 25%
Total : 100 %	



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Lecture Breakdown:			
Week No.	Topics	Assessment	Remarks
1	<ul style="list-style-type: none"> Course Introduction, About Web: Definition, Internet Protocols (Layers), Client Server Model, Request Response Loop, Peer to Peer model. Role of DNS, HTTP, Uniform Resource Locators (URL), Web Servers Lab: Exploring Web page behaviors and types of online services 		
2	<ul style="list-style-type: none"> HTML: Syntax, Structure, Elements, Markup. HTML5, Role of W3C, Doc Type, HTML essentials Lab: Working on HTML basic codes, structure and analysis of sources 		
3	<ul style="list-style-type: none"> HTML Tags, nested tags, required structured tags, Doctype, Head, Divs, Images, Links, Lists, Tables, Nav Bar Lab: Comprehensive HTML Lab with Navigation bar 		
4	<ul style="list-style-type: none"> CSS-1: Syntax, Blocks, Selectors, Properties, Inline styles, Id vs class selectors, Margins, Borders, Text, Style sheets Lab: CSS Lab to implement the above given rules 		
5	<ul style="list-style-type: none"> CSS-3, Bootstrap Media Queries Responsive Grid Grid layout and use of class keyword Lab: CSS-3 Lab 		
6	OHT-1		
7	<ul style="list-style-type: none"> Javascript Interactivity, Design, Syntax, DOM, Events Lab: Javascript Lab 		
8	<ul style="list-style-type: none"> JQuery Adding JQuery Library, Syntax, Scripting, Functions, Event Actions on clicks JQuery: Image Gallery Case Study Lab: Complete Photo Gallery web page development 		
9	<ul style="list-style-type: none"> JQuery variables and their use, if-else structure, Use of Boolean, Online Book Reader application case Study using JQuery Lab: Developing an interactive book reading website with controls 		
10	<ul style="list-style-type: none"> Angular JS: Advantages and Features Components, MVC model, Controllers Lab: Angular JS part 1 		
11	<ul style="list-style-type: none"> Angular JS: Directives, Expressions, Filters, Services Lab: Angular JS part 2 		
12	OHT-2		
13	<ul style="list-style-type: none"> Introduction to Server side Development with PHP What is Server side development? Server side Technologies, Languages, installing LAMP / Laravel Lab: Installing PHP framework, WAMP(Sample PHP code testing) 		
14	<ul style="list-style-type: none"> PHP control structures, Datatypes, Strings, printf if-else, do-while, for clause Lab: PHP lab 2 (PhpMyAdmin-WAMP Server (Apache2, PHP & MySQL)) 		
15	<ul style="list-style-type: none"> PHP Arrays, Classes and Objects Lab: Project Demo & Presentation 		
16	<ul style="list-style-type: none"> PHP- Database & Web, MySQL, API, CRM Database example Lab: Project Demo & Presentation 		
17	<ul style="list-style-type: none"> Laravel- PHP Lab: Project Demo & Presentation 		
18	ESE		



Tools / Software Requirement:
Wrangler, Notepad ++, Eclipse with J2EE & PHP, WAMP/LAMP with php5 and apache2, Google Chrome browser, Mozilla browser, PhpMyAdmin, associated libraries (provided with the course)
Book:
Forbes, Alan. The Joy of PHP: A Beginner's Guide to Programming Interactive Web Applications with PHP and MySQL

Grading policy:	
Quiz Policy:	The quizzes will be unannounced and normally last for ten minutes. The question framed is to test the concepts involved in last few lectures. Number of quizzes that will be used for evaluation is at the instructor's discretion.
Assignment Policy:	In order to develop comprehensive understanding of the subject, assignments will be given. Late assignments will not be accepted / graded. All assignments will count towards the total (No 'best-of' policy). The students are advised to do the assignment themselves. Copying of assignments is highly discouraged and violations will be dealt with severely by referring any occurrences to the disciplinary committee. The questions in the assignment are meant to be challenging to give students confidence and extensive knowledge about the subject matter and enable them to prepare for the exams.
Lab Conduct:	The labs will be conducted for three hours every week. A lab handout will be given in advance for study and analysis. The lab handouts will also be placed on LMS. The students are to submit their results by giving a lab report at the end of lab for lab evaluation. However, students will also be evaluated by oral viva during the lab or at the end in a viva session.
Plagiarism:	SEecs maintains a zero tolerance policy towards plagiarism. While collaboration in this course is highly encouraged, you must ensure that you do not claim other people's work/ ideas as your own. Plagiarism occurs when the words, ideas, assertions, theories, figures, images, programming codes of others are presented as your own work. You must cite and acknowledge all sources of information in your assignments. Failing to comply with the SEecs plagiarism policy will lead to strict penalties including zero marks in assignments and referral to the academic coordination office for disciplinary action.

Program Learning Outcomes (PLOs)

Program outcomes are the narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. The program must demonstrate that by the time of graduation the students have attained a certain set of knowledge, skills and behavioral traits, at least to some acceptable minimum level. Specifically, it is to be demonstrated that the students have acquired the following graduate attributes:

- Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.



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- (iii) **Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- (iv) **Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
- (v) **Modern Tool Usage:** An ability to 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.
- (vi) **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
- (vii) **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- (viii) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- (ix) **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.
- (x) **Communication:** An ability to communicate effectively, orally as well as in writing, 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.
- (xi) **Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.
- (xii) **Lifelong Learning:** An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.