PES UNIVERSITY,

(Established under Karnataka Act No. 16 of 2013)

Department of Computer Science & Engineering

Session : Aug-Dec, 2022

UE21CS242A: WEB TECHNOLOGIES (4:0:0:0:4)

Course Information

Web Technologies course demonstrates an in-depth understanding of the technologies necessary for designing and developing a rich web application in an efficient way.

Course Outcomes:

At the end of the course, the student will be able to,

1.Understand basic web technologies like HTML, CSS and JavaScript

2. Achieve rich user experience by implementing HTML5 features and Asynchronous communication using AJAX and JQuery

3. Understand MERN stack layers (MongoDB, ExpressJS, ReactJS and NodeJS) and Create rich User Interface using React JS

4. Integrate the UI with MongoDB database through NodeJS

5. Create RESTful Web services using ExpressJS

# of Credits: 4 **# of Hours: 75**

Class #	Chapter Title/Reference Literature	Topics to be Covered	% of Portions Covered	
			% of Syllabus	Cumulative %
1.	**UNIT 1(12 Hours) TB1 : Chapter 1,Chapter 13 : Page no 309 to 323 Chapter 18 and 19**	Introduction to Web Architecture and Web protocols (HTTP Request Response Formats, URLs)	**21.43%**	**21.43%**
2.		Basic Mark-ups & syntax, HTML elements & attributes		
3.		Web Form 2.0 & Form Controls		
4.		HTML5 (New Tags, Inputs, Elements and Controls),		
5.		CSS3.0-Styles and Style sheets,		
6.		Selectors, Style properties		
7.		Box Model and Positioning		
8.		CSS Flex Property and Media Queries		
9.		JavaScript Basics(Variables, Scope)		
10.		JavaScript Basics: Functions, Hoisting		
11.		JavaScript Built in Objects		
12.		JavaScript Objects		
13.		**Review: Lab Assignment on HTML and CSS: Unit 1 – Submission of project Titles and Team Members**		
14.		ISA 1		
15.	**UNIT 2(12 hours) TB1 : Chapter 17, Chapter 21,22,24,25**	JavaScript Objects and Prototypal Inheritance	**21.43%**	**42.86%**
16.		DOM Manipulations		
17.		Events		
18.		Event Handling in JavaScript,		
19.		HTML5 (APIs), Audio, Video, Progress		

20.		HTML5 (APIs) – Canvas, SVG, File api, geolocation, web workers.		
21.		JQuery (Introduction, Handling events)		
22.		JQuery (Introduction, Handling events)		
23.		Callbacks & Promises, Single Page Application		
24.		XML Vs JSON, Asynchronous Communication- XHR (properties and methods)		
25.		$.ajax,$.get,$.post,		
26.		$load, Fetch API		
27.		**Review: Lab Assignment on Javascript : Unit 2**		
28.		ISA 2		
29.		**Project Review- Submission of wireframe design**		
30.	**UNIT 3(10 Hours) TB2 : Chapter 1,3,4 ,8**	MERN Introduction	**17.85%**	**60.71%**
31.		React Classes and Components		
32.		Styling and Complex components		
33.		Properties, States and Context		
34.		Component lifecycle methods		
35.		**Self Learning: Explore on Bootstrap template. Apply Bootstrap's choices of color, size, font and layout to your own project.**		
36.		Stateless components		
37.		Refs & Keys		
38.		Event Handling		
39.		React Form Handling		
40.		React Form Handling		
41.		**Review: Lab Assignment on ReactJS: Unit 3**		
42.		ISA 3		
43.	**UNIT 4(12 Hours) TB2 : Chapter 6**	Understanding Node JS Architecture	**21.43%**	**82.14%**
44.		Set up Node JS app		
45.		Node Modules		
46.		Buffers, Streams, File system		
47.		HTTP Module, Handling HTTP Requests		
48.		HTTP Module, Handling HTTP Requests		
49.		**Self Learning : Compare AngularJS and ReactJS and NodeJS**		
50.		Mongo DB- Documents, Collections		
51.		Reading and Writing to DB		
52.		MongoDB Node JS Driver		
53.		Events and Events Emitter		
54.		Running a react application on NodeJS(Hands-on)		
55.		React Router		
56.		**Review: Lab Assignment on NodeJS: Unit 4**		
57.		ISA 4		
58.	**UNIT 5(10 hours) TB2 : Chapter 5**	Introduction to Web services	**17.86%**	**100%**
59.		REST API's		
60.		Express Framework Overview		
61.		Routing		
62.		URL Binding		
63.		Error Handling		
64.		Express Middleware		
65.		Form Data		
66.		File Upload		
67.		File Upload		

68.		**Review: Lab Assignment on ExpressJS: Unit 5**		
69.		**Self Learning: Vue JS**		
70.		ISA 5		
71.		Guest Lecture		
72.				
73.		**Mini Project Presentation and Evaluation**		
74.				
75.				

Tools / Languages:
HTML, CSS, JavaScript, MERN Technologies.

Books:

Book Type	Code	Title & Author	Publication Information		
			Edition	Publisher	Year
Text Book	T1	Learning PHP, MySQL & JavaScript, 5th Edition. by Robin Nixon. May 2018, O'Reilly Media, Inc. ISBN: 9781491978917	2nd	Wiley Publishing	2018
Text Book	T2	Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node by Vasan Subramanian. March 2017, Apress	1st	O'Reilly	2017
Reference Book	R1	Beginning Node.js, Express & MongoDB Development by Greg Lim, July 2019	1st	McGraw Hill	2019
Reference Book	R2	Learning React, Functional Web Development with React and Redux By Alex Banks and Eve Porcello, May 2017, O'Reilly Media	1st	O'Reilly Media	2017

Course Plan Summary	
Unit Distribution	56 hrs
ISA	5 hrs
Assignments (5 Assignments)	5 hrs
Mini Project Wireframe Design	1 hr
Mini Project Presentation	3 hrs
Self Learning (3 Topics)	3 hrs
Guest Lecture	2 hrs
Total	**75 hrs**

Evaluation Policy

Evaluation Components	Mark Split up	Detailed Description
ISA	30 Marks	Best of 4 out of 5 ISA (7.5 Marks for each ISA – 4 x 7.5= 30 Marks)
Lab Assignment	10 Marks	At the end of each unit, one assignment will be given, 2 marks for each assignment (5 X 2

		= 10 Marks)
Mini Project (3 Students in a team)	6 Marks	5 Hrs Apply MERN Stack • Front End (ReactJS) – 2 Marks • Back End (NodeJS and ExpressJS) - 2 Marks • Database (MongoDB)- 1 Marks • Hosting Website- 1 Marks
Exploring other technologies and comparing with existing tools **(Self-Learning)**	4 Marks	1. Explore on Bootstrap template. Apply Bootstrap's choices of color, size, font and layout to your own project. 2Marks 2. Compare AngularJS and ReactJS and NodeJS – 1 Marks 3. Learning Vue JS – 1 Marks

Mini Project Evaluation Schedule

Aug 29th 2022	Submission of Project Batches and title (through Google Forms) Team Name , Name & SRN of Team Members	2 marks to be reduced for students who fail to submit the forms
Sept 21th 2022	Submission of Wire Frames after completing design	Wireframes along with a brief writeup of the project idea must be submitted to the concerned faculty on the date indicated. The submission should be on A4 size paper and should have a cover page with team and topic details.
Nov 21st – 25th 2022	Final Demo	The website must be demonstrated on the hosting services.

Objectives of Mini Project:

- The aim is to develop a unique idea and design a web application for it.
- Develop a web application with 8-10 distinct web pages with rich front-end functionality (Using HTML, CSS & JavaScript and React Framework)
- Include backend support for at least two web pages using backend framework Nodejs, Express APIs and Database (MongoDB)
- While there may be a few traditional pages like About Us, Contact Us, Team, Feedback Form, Login, register etc, the main idea should be innovative to get higher scores.
- Rich frontend and backend have to be developed using the concepts covered during the entire course.

Mini Project Guidelines:

- The students have to form a team of 3 members (strictly)
- The students have to choose an application idea to work on. The scope and complexity will be approved by the faculty member based on the number of team members.

Example project ideas: a shopping website for video games, student social networking website, Bill Payment, Banking system, etc

- A student is expected to work on all layers of the application (Front-end, Server-end and Database).

Grading of Assignment

If any assignment, is submitted late, the following applies:

- •Late by up to 24 hours (1 day) – lose 50% of your marks
- •Late by up to 48 hours (2 days) – lose 75% of your marks
- •Late Beyond 48 hours – Zero

- Don't share Assignment solutions with each other
- You should never see or have possession of anyone else's solutions — including from past semesters.
- No submission of downloaded code (from the Internet or anywhere else) is accepted.
- Dishonesty will result in severe penalties. Any dis-honesty will result in Zero marks for the assignment/work
- All assignments must be submitted through google forms.

Grading of Mini Project:

- Copying of code, ideas or content among teams will be severely penalized.
- You must have a presentation (max. 6 slides) highlighting the noteworthy aspects of your project followed by the demo.
- Even though this is a team project, each student is evaluated individually.
- All mini project topics and batches must be finalized by the evaluation schedule.
- Any change in topic or batches after that will result in a penalty of two marks.
- Topic change or batch change will be allowed only after approval by the teacher.
- Mini Project title and team member details must be submitted through google forms.

If mini project work is submitted late, the following applies:

- Late by up to 24 hours (1 day) – lose 25% of your marks
- Late by up to 48 hours (2 days) – lose 50% of your marks
- Late by up to 72 hours (3 days) – lose 75% of your marks
- Late Beyond 72 hours – Zero

Grading of Self learning

Students have to submit self-learning topics individually.

For late submission, the following applies:

- •Late by up to 24 hours (1 day) – lose 50% of your marks
- •Late by up to 48 hours (2 days) – lose 75% of your marks
- •Late Beyond 48 hours – Zero

- Don't share solutions with each other
- Dishonesty will result in severe penalties. Any dis-honesty will result in Zero marks for work
- All topics must be submitted through google forms.