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MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

COURSE STRUCTURE

Course Code	**CET3003B**			
Course Category	Core Engineering			
Course Title	**Full Stack Development Technologies**			
Teaching Scheme and Credits	**Lectures**	**Tutorial**	**Laboratory**	**Credits**
Weekly load hrs	**-**	**-**	**4**	**2**

Pre-requisites:

- Principles of Programming Languages
- Computer Networks

Co-requisite

- Database Management Systems

Course Objectives:

1. Knowledge

i. To understand best practices for web-site project development.
ii. To understand the frontend and backend technologies for web application development.

2. Skills

i. To acquire skills for developing web applications using frontend and backend technologies.
ii. To acquire skills for deployment processes for real world web-based applications.

3. Attitude

i. To use best practices for developing a dynamic and responsive website.
ii. To use various technology stack such as MEAN and MERN for developing a website.

Course Outcomes:

After completion of the course, the students will be able to:

1. To apply best practices to design and develop dynamic and responsive web pages.
2. To select and apply appropriate frontend technologies for responsive User Interface (UI) development
3. To design and develop web applications using various technology stacks.
4. Test and deploy real world web-based applications on different platforms.

Learning Resources:

Text Books:

1. Full-Stack JavaScript Development by Eric Bush ISBM details
2. Mastering Full Stack React Web Development by Tomaz Dyl
3. Ralph Moseley & M. T. Savaliya, “Developing Web Applications”, Wiley publications.

Reference Books:

1. Hands-On Full Stack Web Development with Aurelia: Develop modern and real-time web applications with Aurelia and Node.js by Diego Jose Arguelles Rojas, Erikson Haziz Murrugarra Sifuentes, 2018, Packt

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2. Full-Stack JavaScript Development Develop, Test and Deploy with MongoDB, Express, Angular and Node on AWS Eric Bush, Maura van der Linden, 2016
3. Modern Full-Stack Development Using TypeScipt, React, Node,js, Webpack, Docker by Zammetti, Frank
4. Achyut Godbole & Atul Kahate, "Web Technologies: TCP/IP to Internet Application Architectures", McGraw Hill Education publications, ISBN, 007047298X, 9780070472983

Supplementary Reading:

1. https://www.linkedin.com/pulse/how-become-full-stack-developer-roadmap-jennifer-winget/
2. https://www.geeksforgeeks.org/how-to-become-a-full-stack-web-developer-in-2021/
3. https://www.hackerearth.com/blog/full-stack/
4. https://github.com/kamranahmedse/developer-roadmap

Web Resources:

1. The Full Stack Developer Your Essential Guide to the Everyday Skills Expected of a Modern Full Stack Web Developer by Chris Northwood, Apress, 2018
2. PHP And MongoDB Web Development Beginners Guide Book by Rubayeet Islam, PACKT, 2019
3. Full Stack Javascript by Azat Mardan Apress Publication, 2015
4. Learning PHP, MySQL & JavaScript by Robin Nixon O'REILLY, 2014

Web links:

1. https://www.pmi.org/learning/library/agile-project-management-scrum-6269
2. https://www.w3schools.com/whatis/whatis_fullstack.asp
3. https://www.geeksforgeeks.org/what-is-full-stack-development/
4. https://www.tutorialspoint.com/angularjs/index.htm

MOOCs:

1. Introduction to Modern Application Development - NPTEL
2. Full Stack Developer (Summer Training) - IIT Kanpur
3. Full Stack Developer Nanodegree Udacity
4. Full Stack Mobile App Development – Coursera

Pedagogy:

1. PowerPoint Presentation
2. Video Lectures
3. Flipped Classroom Activity
4. Open source Tools
5. Project Based Learning

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Assessment Scheme:

Laboratory Continuous Assessment (LCA) 100 marks

Practical Performance	Additional implementation/ Content beyond syllabus	Active Learning	Mini-project	Oral
30 Marks	10 Marks	10 Marks	40 Marks	10 Marks

Term End Examination: Not Applicable

Syllabus: Theory

Module No.	Contents	Workload in Hrs Theory
1	**Introduction to World Wide Web** **Introduction to web technology** Internet and WWW, website planning and design issues, web development solution stacks **Hyper Text Mark-up Language (HTML)** Structure of HTML document, HTML elements: headings, colors & fonts, links, lists, tables, images and forms. Difference between HTML and HTML5. **Cascading Style Sheets** Introduction to Style Sheet, Need of CSS, basic syntax and structure, Inline, Internal and External CSS, CSS Box Model, Inserting CSS in an HTML page, CSS selectors. **BOOTSTRAP Technology for responsive web page development.** **XML and JSON** **HTTP protocol** GET, POST, PUT methods.	07
2	**Client-Side Scripting** **JavaScript:** Introduction to JavaScript (JS), Core features, JS in an HTML (Embedded, External). **Document Object Model (DOM):** DOM levels, DOM Objects and their properties and methods, Manipulating DOM. **JQuery Ajax**	07

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3	**Server-Side Technology and Content Management Systems** **Server-Side Scripting and its need** **PHP Hyper-Text Pre-processor (PHP)** Introduction to PHP, Form handling in PHP, Database Connectivity using MySQL and PHP, Cookies and Session Tracking. **Content Management Systems** WordPress/Drupal/Joomla	08
4	**Advanced Technology Stacks** **MERN stack** Introduction to web development stacks, React, Express Framework, Mongo DB database, Node JS, Sample case study using MERN. **Web Services** REST APIs (Representational State Transfer) using Express and Node.	08

Laboratory:

Lab	Assignment Statement	Workload in Hrs
		Lab
1	Created a public git repository for your team and submit the repo URL as the solution to this assignment, Learn Git concept of Local and Remote Repository, Push, Pull, Merge and Branch.	04
2	Design and develop a responsive web page using Bootstrap front end framework. Web pages should contain HTML5 elements (Use all possible formatting for example font, colour etc.). Web page should include various images, links within the page, links to other pages for navigation, new tabs.	04
3	Write a program to perform following form validations using JavaScript: a) All fields mandatory, b) Phone number, Email Address, Zip code Validation etc. Include JavaScript to access and manipulate Document Object Model (DOM) objects in an HTML web page. Include JQuery to develop to develop your application as an Ajax based application.	04
4	Write server side script in PHP to perform form validation and create database application using PHP and MySQL to perform insert, update, delete and search operations.	06

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5	Design and develop an interactive user interface using React.	10
6	Develop a set of REST API using Express and Node.	08
7	Develop a full stack web application using MERN stack to perform CRUD operations.	12
8	Mini Project (based on technology stacks learned)	12

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