MERN STACK DEVELOPMENT

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| **Course Code** | 20CS3603 | **Year** | III | **Semester** | II |
| **Course**  **Category** | Program Core | **Branch** | CSE | **Course Type** | Theory |
| **Credits** | 3 | **L-T-P** | 3-0-0 | **Prerequisites** | Programming with JAVA |
| **Continuous Internal**  **Evaluation :** | 30 | **Semester End Evaluation:** | 70 | **Total Marks:** | 100 |

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| **Course Outcomes** | | |
| Upon successful completion of the course, the student will be able to | | |
| **CO1** | Understand the fundamental concepts of web application development. | **L2** |
| **CO2** | Apply Node.JS restful APIs to Interact with HTTP services | **L3** |
| **CO3** | Apply React JS concepts to build an Application. | **L3** |
| **CO4** | Apply the concepts of Mongo DB to manipulate the Database | **L3** |

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| **Syllabus** | | |
| **Unit**  **No.** | **Contents** | **Mapped**  **CO** |
| **I** | **Introducing the Node.js-to-Angular Stack**: Understanding the Basic Web Development Framework, Understanding the Node.js-to-Angular Stack Components, **JavaScript Primer** - Defining Variables, Understanding JavaScript Data Types, Using Operators, Implementing Looping, Creating Functions, Understanding Variable Scope, Using JavaScript Objects, Manipulating Strings, Working with Arrays, Adding Error Handling | **CO1** |
| **II** | **Getting Started with Node.js**: Understanding Node.js, Installing Node.js, Working with Node Packages, Creating a Node.js Application, Writing Data to the Console | **CO1,**  **CO2** |
| **III** | **Implementing HTTP Services in Node.js**: Processing URLs, Understanding Request, Response, and Server Objects, Implementing HTTP Clients and Servers in Node.js, Implementing HTTPS Servers and Clients, **Implementing Express in Node.js**: Getting Started with Express, Configuring Routes, Using Request/Responses Objects | **CO1,CO2** |

**Course Coordinator**

Dr P Sai Kiran -

B Vishnu Vardhan - **HOD**

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| **IV** | **How React Works** - Page Setup, React Elements, ReactDOM, React, components, [React with JSX](https://learning.oreilly.com/library/view/learning-react-2nd/9781492051718/ch05.html#react-with-jsx)- React Elements as JSX, [Babel](https://learning.oreilly.com/library/view/learning-react-2nd/9781492051718/ch05.html#babel), Recipes as JSX, React Fragments, Intro to webpack, **React State Management** - Building Forms, **Incorporating Data** - Requesting Data, **Virtualized Lists** - Creating a Fetch Hook, Creating a Fetch Component, Handling Multiple Requests, Memozing Values, React Router. | **CO1,**  **CO3** |
| **V** | **Understanding NoSQL and MongoDB**: Why NoSQL?, Understanding MongoDB, MongoDB Data Types; **Getting Started with MongoDB and Node.js**: Building the MongoDB Environment, Accessing MongoDB from the Shell Client, MongoDB Shell commands and methods, Adding the MongoDB Driver to Node.js , Connecting to MongoDB from Node.js | **CO1,CO4** |

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| **Learning Resources** |
| **Text Books** |
| 1. Node.js, MongoDB and Angular Web Development by Brad Dayley, Brendan Dayley, Caleb Dayley, 2nd edition, Perason, ISBN-13: 978-0134655536, ISBN-10: 0134655532 2. Learning React Modern Patterns for Developing React Apps, 2nd Edition, Oreilly, ISBN: 978-1-492-D5172-5 |
| **References** |
| 1. Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node by Vasan Subramanian, Apress; 2nd ed. edition (13 May 2019), ISBN-10 ‏ : ‎ 1484243900, ISBN-13 ‏ : ‎ 978-1484243909 2. Mongodb, React, React Native Full-Stack Fundamentals and Beyond, by Eric Bush, Zaccheus Entertainment Publication, ISBN-10 ‏ : ‎ 0997196688, ISBN-13 ‏ : ‎ 978-0997196689  Quick Start Guide: Build web applications with MongoDB, Express.js, React, and Node by Eddy Wilson Iriarte Koroliova, Packt Publishing, ISBN-10: 1787281086, ISBN-13‏: ‎ 978-1787281080Beginning Node.js, Express & MongoDB Development, by Greg Lim (Author), ISBN-10 : 9811480281Beginning Node.js, Basarat Syed, APress, ISBN-10: 9781484201886 |
| **e-Resources and other Digital Material** |
| 1. [www.w3schools.com](http://www.w3schools.com/) 2. <https://www.javatpoint.com/mean-stack-tutorial> 3. <https://www.linode.com/docs/guides/mean-stack-tutorial/> |

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