

EC22-2: Advance Web Development			
Teaching Scheme: Theory Sessions: Total 45 hours		Credit: 03	Examination Scheme: Internal (TH): 25 Marks External (TH): 50 Marks Total :75 Marks
Prerequisites: Student must have hands-on working knowledge of JavaScript, Web Design & Development			
Course Objectives: <ul style="list-style-type: none"> • Build APIs using Node and Express.js • Create single-page applications with one of the most modern JavaScript frameworks • Develop modern, complex, responsive and scalable web applications with Angular • Understand the architecture of Angular application and how to use it 			
Course Outcomes: On completion of the course, learners should be able to			
CO#	Cognitive Domain	Course Outcomes	
CO1	Apply	Implement a Web Server in Node	
CO2	Apply	Apply TypeScript features such as decorators, generics, and modules for creating reusable and maintainable code	
CO3	Apply	Implement concepts and methods of Angular	
CO4	Apply	Implement Angular services, dependency injections and Asynchronous operations	
CO5	Create	Develop website using Next.js	
Unit No.	Contents	Weightage in %	No of Sessions
1	Node.js 1.1 Introduction to Node JS, what is Node JS, Node.js Process Model, Advantages of Node JS 1.2: Setup Development Environment, Install Node.js on Windows, Working in REPL, Node JS Console 1.3: Node JS Modules, Functions, Buffer, Core Modules, Local Modules, Modules Types, Modules Exports 1.4 Node Package Manager What is NPM, Installing Packages Locally, globally, Adding dependency in package JSON 1.5: Creating Web Server Creating Web Server, Handling http requests, Sending Requests 1.6: File System Fs.readFile, Writing a File, Opening a file, Deleting a file, other IO Operations, Writing a file asynchronously 1.7: Events Event Emitter class, Returning event emitter, Inheriting Events 1.8 Express.js , web development with Express.js	15	8

*Mapping of Course Outcomes for Unit 1: CO1			
2	Typescript 2.1 Typescript Basics, Types 2.2 Functions in Typescript 2.3 Classes & interfaces 2.4 Generics 2.5 Modules 2.6 Ambients	10	7
*Mapping of Course Outcomes for Unit 2: CO2			
3	Angular (Latest version) 3.1 Components - Create, Use, and Manage Components 3.2 Directives - add, remove, or manipulate elements in the DOM 3.3 Modules 3.4 Data Binding 3.5 Expressions, String interpolation 3.6 Pipes - Pipes in Angular, use of pipes, Chaining Multiple pipes in angular, Parameterizing a pipe, Filter Pipe, Impure & Pure Pipe, async Pipes 3.7 Routing - create and manage routes 3.8 Form designing - using Bootstrap, template driven forms 3.9 Single Page Applications (SPAs)	25	10
*Mapping of Course Outcomes for Unit 3: CO3			
4	Services & Dependency Injection 4.1 Introduction of Services & Dependency Injection 4.2 Building a Service 4.3 Working with Injectors 4.4 Working with Providers 4.5 Registering Providers with real time examples 4.6 Reactive Forms 4.6.1 What is Reactive Forms 4.6.2 Create Reactive form through code 4.6.3 Syncing of HTML and Form 4.6.4 Adding Validation 4.6.5 Sumit Forms 4.6.6 Grouping 4.6.7 Form Control Arrays 4.6.8 Custom Validators 4.6.9 Relative Forms 4.6.10 Async validation 4.6.11 Value changes and reacting to status 4.7 ASYNCHRONOUS OPERATIONS & HTTP	25	10

	4.7.1 Introduction to Async 4.7.2 Promises 4.7.3 Working with Observables 4.7.4 EventEmitter 4.7.5 Async Pipes 4.7.6 Handling HTTP Request / Response 4.7.7 Headers & Request Settings 4.7.8 Providing HTTP		
*Mapping of Course Outcomes for Unit 4: CO4			
5	Next.js 5.1 Introduction to Next.js 5.2 Next.js Pages(Static and Dynamic) 5.3 Style Next.js app with CSS module 5.4 Create a Next.js App 5.4.1 Setup 5.4.2 Editing the Page 5.4.3 Navigate Between Pages 5.4.4 Assets, Metadata, and CSS 5.4.5 Pre-rendering and Data Fetching 5.4.6 Dynamic Routes 5.4.7 API Routes 5.4.8 Deploying Next.js App	25	10
*Mapping of Course Outcomes for Unit 5: CO5			
Learning Resources			
Text Books <ul style="list-style-type: none"> Beginning Node.js by Basarat Ali Syed Beginning Node.js, Express & MongoDB Development by Greg Lim Essential TypeScript 4: From Beginner to Pro by Adam Freeman Angular: Up and Running- Learning Angular, Step by Step by Shyam Seshadri 5. Beginning PHP, Apache, MySQL web development 			
Reference Books <ul style="list-style-type: none"> Node.js in Action, 2ed by Alex Young, Bradley Meck Mastering Node.js by Pasquali Sandro TypeScript Crash Course: A hands-on guide to building safer and more reliable web applications (English Edition) by Daniel Cavalcante Angular Essentials by Kumar Dhananjay Complete Ref. PHP 			
Recommended Learning Material <ul style="list-style-type: none"> Server-side Development with NodeJS, Express and MongoDB – The Hong Kong 			