**Angular Syllabus (Beginner to Advanced)**

**🔹 1. Introduction to Angular**

* What is Angular?
* Features and Advantages of Angular
* Angular vs. React vs. Vue
* Setting up an Angular Development Environment
* Understanding TypeScript for Angular

**🔹 2. Angular Basics**

* Angular Project Structure
* Understanding **Modules** and **Components**
* Angular CLI Commands
* Working with Templates & Interpolation
* Directives in Angular (\*ngIf, \*ngFor, ngClass, ngStyle)
* Property Binding & Event Binding
* Two-Way Data Binding with ngModel

**🔹 3. Angular Components and Lifecycle Hooks**

* Creating & Using Components
* Component Communication (Parent-Child, Input & Output Decorators)
* Lifecycle Hooks (ngOnInit, ngOnChanges, ngAfterViewInit, etc.)
* ViewChild & ContentChild Decorators

**🔹 4. Angular Directives & Pipes**

* Structural Directives (\*ngIf, \*ngFor, \*ngSwitch)
* Attribute Directives (Custom Directives, ngClass, ngStyle)
* Built-in Pipes (uppercase, date, currency, etc.)
* Custom Pipes

**🔹 5. Angular Forms**

* Template-Driven Forms
* Reactive Forms
* Form Validation (Built-in & Custom Validators)
* Handling Form Submissions
* Working with Form Groups & Form Controls

**🔹 6. Angular Services & Dependency Injection**

* Creating & Using Services
* Understanding Dependency Injection
* Singleton Services
* Communicating between Components using Services

**🔹 7. Angular Routing & Navigation**

* Setting up Routing in Angular
* Route Parameters & Query Params
* Child & Nested Routes
* Lazy Loading Modules
* Guards (CanActivate, CanDeactivate)
* Resolver for Pre-Fetching Data

**🔹 8. HTTP Client & API Integration**

* Making API Calls with HttpClient
* Handling Promises & Observables
* Interceptors for API Requests
* Error Handling & Retry Mechanism
* CRUD Operations with REST API

**🔹 9. State Management in Angular**

* Local State vs. Global State
* Using Services for State Management
* NgRx (Redux for Angular)
* RxJS Operators (map, filter, mergeMap, switchMap)
* BehaviorSubject for State Management

**🔹 10. Angular Material & UI Libraries**

* Introduction to Angular Material
* Using Material Components (Buttons, Tables, Dialogs, Forms)
* Customizing Material Theme
* Working with Bootstrap & Tailwind CSS in Angular

**🔹 11. Performance Optimization**

* Lazy Loading Modules
* Change Detection Strategies (OnPush, Default)
* Virtual Scrolling
* Caching API Responses
* Optimizing Angular Builds (AOT Compilation, Tree Shaking)

**🔹 12. Advanced Angular Concepts**

* Custom Directives
* Angular Animations
* WebSockets in Angular
* Internationalization (i18n)
* Server-Side Rendering (SSR) with Angular Universal

**🔹 13. Testing in Angular**

* Unit Testing with Jasmine & Karma
* Testing Components, Services, and Directives
* Mocking HTTP Requests with HttpTestingController
* End-to-End (E2E) Testing with Cypress or Protractor

**🔹 14. Angular with Backend Integration**

* Connecting Angular with Node.js & Express
* JWT Authentication & Authorization
* Firebase Integration in Angular

**🔹 15. Angular Deployment & Build Optimization**

* Creating a Production Build
* Deploying on Firebase, Netlify, or Vercel
* Dockerizing Angular Applications
* CI/CD Pipeline for Angular Apps

**🎯 Final Projects & Hands-on Practice**

* Todo List App
* E-commerce Dashboard
* Blogging Platform
* Real-Time Chat App using WebSockets
* Inventory Management System