

Contact No. 9257552515  
8107113669

# Full Stack Development Course



**CODE INTEL**  
— A C A D E M Y —

Premier Institute For Computer Science  
Where Dreams Becomes True.

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Jaipur 302018

# Full Stack Development ROADMAP



# Hyper Text Mark-up Language (HTML5)

## Module Objectives:

- Building Strong expertise to develop front end application using HTML5
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

## Overview:

This course provides you hands-on experience and exposure to developing HTML5 based single page application for browsers. This course builds strong foundation on HTML5 which will help developer to use HTML5 concepts for building responsive web application.

## Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
  - Firefox, Chrome

## Prerequisites:

Academic level web application knowledge

## Delivery method:

Instructor lead, hands-on exercises backed with assignments and mini project

## Detailed Course Contents

- Introduction HTML
- HTML Basics
- HTML Elements
- HTML5 Semantic
- HTML Attributes
- HTML Headings
- HTML Paragraph
- HTML Styles
- HTML Formatting
- HTML Quotations
- HTML Computer Code
- HTML Comments & Colours
- HTML CSS, Links and Images
- HTML Lists
- HTML Blocks
- HTML Classes
- HTML Layout
- HTML Responsive
- HTML iframes
- HTML JavaScript
- HTML Head
- HTML Entities and URI Code
- HTML Symbols and XHTML
- • HTML Charset and Forms

# Cascading Style Sheets (CSS3)

## Module Objectives:

- Building Strong expertise to develop front end application using CSS3
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

## Overview:

This course provides you hands-on experience and exposure to developing CSS3 based web application. This course builds strong foundation on CS33 which will help developer to use CSS3 concepts for building responsive web application.

## Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
  - Firefox, Chrome

## Prerequisites:

Academic level web application knowledge

## Delivery method:

Instructor lead, hands-on exercises backed with assignments and mini project

## Detailed course contents:

- Introduction CSS3
- CSS3 Syntax
- CSS3 How To
- CSS3 Colours
- CSS3 Backgrounds
- CSS3 Borders
- CSS Padding
- CSS Height/Width
- CSS3 Gradients
- CSS3 Shadows
- CSS3 Text
- CSS3 Fonts
- CSS3 2D Transforms
- CSS3 3D Transforms
- CSS Links
- CSS Lists
- CSS Tables
- CSS Box Model
- CSS Outline
- CSS Display
- CSS Max-width
- CSS Position
- CSS Float
- CSS Inline-block
- CSS Align
- CSS Combinators
- CSS Pseudo-class
- CSS Pseudo-element
- CSS Navigation Bar
- CSS Dropdowns
- CSS Tooltips
- CSS3 Images
- CSS Attr Selectors
- CSS Forms
- CSS Counters
- CSS3 Animations
- CSS3 Buttons
- CSS3 Pagination
- CSS3 Multiple Columns
- CSS3 User Interface
- CSS3 Box Sizing
- CSS3 Filters
- CSS3 Media Queries
- CSS3 Responsive

# Bootstrap Syllabus

## Module Objectives:

- To become proficient in Bootstrap concepts
- To develop a web pages based on Bootstrap

## Overview:

This course is targeted for fresh engineers or professional who want to build competency in the Bootstrap Based web development.

## Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

## Prerequisites:

Academic level web application knowledge

## Delivery method:

Instructor lead, hands-on exercises backed with assignments and mini project

## Detailed course contents:

- Introduction to Bootstrap
- Bootstrap Basics
- Bootstrap Grids
- Bootstrap Themes
- Bootstrap CSS
- Bootstrap JS

# Word Press Syllabus

## Module 1: Introduction to WordPress

- Understanding what WordPress is
- Exploring the WordPress ecosystem
- Differentiating between WordPress.com and WordPress.org

## Module 2: Setting Up WordPress

- Domain registration and hosting
- Installing WordPress
- Configuring basic settings

## Module 3: Understanding the WordPress Dashboard

- Navigating the Dashboard
- Overview of Dashboard elements
- Customizing Dashboard preferences

## Module 4: Creating Content

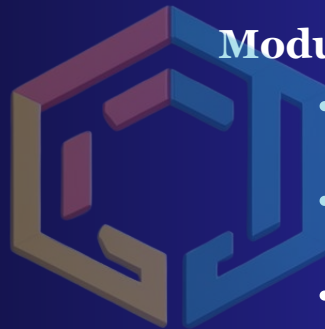
- Posts vs. Pages
- Writing and formatting content
- Adding images, videos, and other media

## Module 5: Managing Content

- Organizing content with categories and tags
- Understanding the media library
- Using the block editor (Gutenberg) effectively

## Module 6: Customizing WordPress

- Choosing and customizing themes
- Installing and configuring plugins
- Customizing site identity, header, and footer



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### **Module 7:Managing Users and Permissions**

- Understanding user roles
- Adding and managing users
- Setting permissions and access levels

### **Module 8:SEO Basics**

- Understanding SEO and its importance
- Optimizing content for search engines
- Using SEO plugins effectively

### **Module 9:Maintaining WordPress**

- Backing up your site
- Updating WordPress, themes, and plugins
- Troubleshooting common issues

### **Module 10:Advanced Topics (Optional)**

- Custom post types and taxonomies
- Advanced theme customization with child themes
- WordPress security best practices

### **Module 11:Building a Complete Website (Project)**

- Planning and structuring a website
- Implementing what you've learned to create a fully functional website
- Presenting the final project and receiving feedback

## **Module 7:Managing Users and Permissions**

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## Module 7:Arrays and Strings

- Introduction to Arrays
- Array declaration
- Array access methods
- Multi-dimensional arrays
- String properties
- String access methods

## Module 8:Regular Expressions

- Introduction to RegExp
- Regular expression usage
- Modifiers
- RegExp patterns
- RegExp methods
- String methods for RegExp
- Type conversion in JavaScript

## Module 9:Objects in JavaScript

- Introduction to objects
- Type of objects in JavaScript
- Creating objects
- Object methods
- Constructor function
- Prototype in JavaScript • Inheritance using prototype chain

## Module 10:Event handling

- JavaScript events
- Event handler
- Event flow
- Event bubbling and capturing
- Event listeners
- Event types

## Module 11:Document Object Model (DOM)

- Introduction to DOM
- Types of DOM
- DOM standards and methods
- Manipulating documents using DOM
- Handling images
- Table manipulation
- Animation
- Node and Node-list handling

## Module 12:Browser Object Model (BOM)

- Introduction to BOM
- DOM vs BOM differences
- Window object and methods
- BOM navigator
- BOM history
- BOM location
- BOM timer
- Introduction to Cookies
- Session and persistent cookies

## Module 13:Form Handling

- Introduction to forms
- Form processing
- Forms object
- Accessing data from forms
- Form validation
- Additional features in forms
- Validation APIs

## Module 14:Debugging Techniques

- JavaScript Errors
- Error handling mechanisms
- Introduction to Google Chrome debugger
- Deep dive into debugger window
- Introduction to Breakpoints
- Changing variable values in runtime
- Avoiding mistakes

# jQuery Syllabus

### Module Objectives:

- Building Strong expertise to develop front end application using HTML5, CSS3 and JavaScript along with jQuery and Angular framework
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

### Overview:

This course provides you hands-on experience and exposure to develop jQuery Mobile based responsive web application. It builds strong foundation of jQuery which will help developer to apply concepts for responsive web frontend development.

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- Introduction to forms
- Form processing
- Forms object
- Accessing data from forms
- Form validation
- Additional features in forms
- Validation APIs

### Module 14:Debugging Techniques

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# **jQuery Syllabus**

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### Module Objectives:

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- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

### Overview:

This course provides you hands-on experience and exposure to develop jQuery Mobile based responsive web application. It builds strong foundation of jQuery which will help developer to apply concepts for responsive web frontend development.

# ReactJS Syllabus

## Module Objectives:

- Create Single Page Applications (SPA) using React
  - Learn core React features and use-cases
- Integrate React Applications into Firebase backend
  - Deploy React applications into popular servers

## Overview:

This course provides you building SPA using React and its core features by taking a hands-on approach. Starting with Introduction this course deep dives into core React features like components, state and event binding and rendering. Followed by core features, participants will learn to integrate React with backend services (ex: Firebase) and consuming HTTP services in forms of REST APIs. The course exposes participants with advanced features like Routing, Authentication and authorization followed by deploying into popular servers (ex: GitHub)

## Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
  - Firefox, Chrome Browsers
  - Firebase (Backend integration)

## Prerequisites:

- OOPS concepts
- Knowledge of HTML, CSS and JavaScript

## Delivery method:

Instructor lead, hands-on exercises backed with assignments and mini project

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# Detailed course contents:

## Module 1: Introduction to React

- History of React
- Key Benefits of React
- React development environment
- Creating your first React Application
- React Source code structure

## Module 2: JSX

- Introduction to JSX
- Coding in JSX
- Expressions in JSX
- Working with HTML
- Conditional Constructs

## Module 3: Components

- Introduction to components
- Why Components?
- Writing JSX code in components
- Adding CSS
- Populating Data Dynamically
- Passing data through "props"
- Multiple Components

## Module 4: Components

- Introduction to Events
- Event Handlers
- Working with state
- Data Binding
- Controlled and Uncontrolled Components

## Module 5: State and Event Binding

- Introduction to Events
- Event Handlers
- Working with state
- Data Binding
- Controlled and Uncontrolled Components

## Module 6: Rendering Lists and Conditional Contents

- Rendering lists of data
- Using stateful list
- Keys in data
- Conditional Contents
- Adding dynamic styles

## Module 7: Debugging Techniques

- Understanding error message
- Code flow and warnings
- Breakpoints
- Using React Dev Tools

## Module 8: Class based Components

- What and Why?
- Adding first class based component
- Working with states and events
- Component Life cycle and in action
- Class based vs functional component

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## Module 9: HTTP

- Introduction to HTTP
- Methods in HTTP
- Response code in HTTP
- Introduction to REST interfaces
- Characteristics of REST
- Introduction to JSON
- JSON data representation
- GET request
- Using async and await
- Handling Http errors
- useEffects()
- POST request

## Module 10: Custom React Hooks

- What are custom hooks?
- Creating and using custom hooks
- Custom HTTP hooks

## Module 11: Forms

- Introduction to Forms
- Working with user input and submission
- Adding validation
- Working with custom hooks

## Module 12: Routing and Navigation

- Introduction to Single Page Applications
- What is Routing?
- Why Routing?
- Installing react router
- Defining and using routes
- Working with links
- Dynamic routes with Params
- Nested routes
- Redirecting the user
- Working with query Param
- Sending and getting data via HTTP

## Module 13: Authentication

- What is authentication?
- Why and How?
- Authentication tokens
- Setting up
- Adding signup
- Showing feedback to the user
- Adding User login
- Managing authstate with context
- Using tokens
- Redirecting the user
- Adding logout
- Protecting frontend pages
- Persisting User authentication status
- Adding auto logout

## Module 13: Deployment

- Introduction
- Deployment steps
- Adding lazy loading
- Building the code for production
- Getting started with deployment
- Handling routes and finishing deployment

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# Node.js Syllabus

Module Objectives:

- Building Strong expertise on Node.js core to develop web application
- Implement web application and deployment

Overview:

This course provides you strong foundation on Node.js driven by hands-on experience and exposure to develop NodeJS based application and deployment. During the course you should be able to builds strong background about Node.js architecture, usage of services and applying Node.js concept to develop frontend application supported by backend web servers.

Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites

Academic level web application knowledge

Delivery method:

Instructed lead, hands-on exercises backed with assignments and mini project

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## Detailed course contents:

### Module 1: Overview and Architecture

- What is Node
- Node Architecture
- How Node Works
- Installing Node
- Your First Node Program
- Event Loop

### Module 2: Node Module System

- Introduction
- Global Object
- Modules
- Creating a Module
- Loading a Module
- Module Wrapper Function
- Path Module
- OS Module
- File System Module
- Events Module
- Event Arguments
- Extending Event Emitter
- HTTP Module

### Module 3: Node Package Manager (NPM)

#### Node Package Manager (NPM)

- Introduction
- Package.json
- Installing a Node Package
- Using a Package
- Package Dependencies
- NPM Packages and Source Control
- Semantic Versioning
- Listing the Installed Packages
- Viewing Registry Info for a Package
- Installing a Specific Version of a Package
- Updating Local Packages
- DevDependencies
- Uninstalling a Package
- Working with Global Packages
- Publishing a Package
- Updating a Published Package

# AngularJS Syllabus

## Module 1: Introduction to AngularJS

- Overview of AngularJS framework
- Understanding the Model-View-Controller (MVC) architecture
- Benefits and features of AngularJS
- Setting up development environment

## Module 2: AngularJS Basics

- AngularJS expressions and data binding
- Directives: ng-app, ng-model, ng-bind, ng-repeat, etc.
- Controllers: Creating and using controllers
- Scope: Understanding scope and its relationship with controllers
- Modules: Organizing code into modules
- Dependency Injection: Introduction to dependency injection in AngularJS

## Module 3: AngularJS Routing

- Introduction to AngularJS routing
- Configuring routes using \$routeProvider
- Route parameters and route configuration
- Nested views and routing

## Module 4: Services and Factories

- Creating custom services and factories
- Using built-in services: \$http, \$location, \$timeout, etc.
- Making HTTP requests using \$http service
- Error handling in HTTP requests

## Module 5: Forms and Validation

- Building forms with AngularJS
- Two-way data binding with forms
- Form validation using built-in validators
- Custom form validation using directives

## Module 7: Directives

- Understanding directives in AngularJS
- Creating custom directives
- Directives lifecycle hooks
- Advanced directive topics: transclusion, isolate scope, compile and link functions

## Module 6: Filters

- Introduction to filters in AngularJS
- Using built-in filters: filter, orderBy, currency, etc.
- Creating custom filters

## Module 8: AngularJS and RESTful APIs

- Consuming RESTful APIs in AngularJS
- CRUD operations with AngularJS and RESTful services
- Handling asynchronous operations with promises

## **Module 9: Testing AngularJS Applications**

- Introduction to testing in AngularJS
- Unit testing with Jasmine and Karma
- End-to-end testing with Protractor

## **Module 11: Deployment and Production Considerations**

- Optimizing AngularJS applications for production
- Deployment strategies for AngularJS applications
- Security best practices for AngularJS applications

## **Module 10: Advanced AngularJS Concepts**

- Inter-component communication using events and services
- Internationalization and localization in AngularJS applications
- Performance optimization techniques
- Integration with third-party libraries and frameworks

# Vue.js Syllabus

## Module 1: Introduction to Vue.js

- Overview of Vue.js framework
- Understanding the Virtual DOM
- Benefits and features of Vue.js
- Setting up development environment

## Module 2: Vue.js Basics

- Vue instance: Creating and mounting Vue instances
- Vue directives: v-bind, v-model, v-for, v-if, etc.
- Interpolations and data binding
- Handling user input with event handling
- Computed properties and watchers

## Module 3: Vue Components

- Introduction to Vue components
- Creating and using components
- Component props and custom events
- Component lifecycle hooks
- Reusability and composition with components

## Module 4: Vue Router

- Introduction to Vue Router
- Configuring routes using Vue Router
- Route parameters and navigation guards
- Nested routes and route configuration
- Lazy loading routes

## Module 5: State Management with Vuex

- Introduction to Vuex
- Managing application state with Vuex
- Vuex store: state, mutations, actions, getters
- Structuring Vuex modules for large-scale applications
- Using Vuex with Vue components

## Module 6: Forms and Validation

- Handling forms in Vue.js
- Two-way data binding with forms
- Form validation using built-in validators
- Custom form validation using directives

## Module 7: HTTP Requests and Axios

- Making HTTP requests in Vue.js applications
- Using Axios for AJAX requests
- Handling asynchronous operations with promises
- Error handling in HTTP requests

## Module 8: Filters and Mixins

- Introduction to filters in Vue.js
- Creating custom filters
- Understanding mixins and their use cases
- Creating and using mixins in Vue components



Contact No. 9257552515  
8107113669

## Module 9:Vue.js Directives

- Understanding directives in Vue.js
- Creating custom directives
- Directive lifecycle hooks
- Advanced directive topics: directives with modifiers, custom directives with parameters

## Module 10: Testing Vue.js Applications

- Introduction to testing in Vue.js
- Unit testing with Jest and Vue Test Utils
- End-to-end testing with Cypress or Nightwatch.js

## Module 11: Deployment and Production Considerations

- Optimizing Vue.js applications for production
- Deployment strategies for Vue.js applications
- Security best practices for Vue.js applications

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# Express Framework Syllabus

## Module Objectives:

- Building Strong expertise on Express framework to develop responsive web application
- Implement MVC and responsive design to provide unified and intuitive user experience across PC, tablet and Mobile

## Phone

## Overview:

This course provides you strong foundation on Express framework driven by hands-on experience and exposure to develop responsive web application using MVC design pattern. During the course, you should be able to build strong background about Express and Node.js architecture, usage of services and applying Node.js concept to develop frontend application supported by backend web servers.

## Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

## Prerequisites:

Academic level web application knowledge

## Delivery method:

Instructor lead, hands-on exercises backed with assignments and mini project

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# Detailed course contents:

## Module 1: Express Framework - (Building RESTful API's)

- Introduction
- RESTful Services
- Introducing Express
- Building Your First Web Server
- Nodemon
- Environment Variables
- Route Parameters
- Handling HTTP GET Requests
- Handling HTTP POST Requests
- Calling Endpoints Using Postman
- Input Validation
- Handling HTTP PUT Requests
- Handling HTTP Delete Requests

## Module 2: Express - Advanced Topics

- Middleware
- Creating Custom Middleware
- Built-In Middleware
- Third-party Middleware
- Environments
- Configuration
- Debugging

## Module 3: Asynchronous JavaScript

- Synchronous Vs. Asynchronous Code
- Patterns For Dealing With Asynchronous Code
- Callbacks
- Callback Hell
- Named Functions to Rescue
- Promises
- Replacing Callbacks with Promises
- Consuming Promises
- Creating Settled Promises
- Running Parallel Promises
- Async and Await

# MongoDB Syllabus

## Module Objectives:

- Building strong expertise in Document Oriented Non-Relational Database Management System
- Implement frontend and backend scenarios to read, write and update data stored in MongoDB

## Overview:

This course provides you hands-on experience and exposure to implement frontend and backend scenarios to read, write and update data using MongoDB. This course builds strong foundation for web application development based on client-server architecture.

## Platform:

- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

## Prerequisites:

Academic level web application knowledge

## Delivery method:

Instructor lead, hands-on exercises backed with assignments and mini project

# Detailed course contents:

## Module 1:CRUD Operations Using MongoDB

- Installing MongoDB
- Connecting to MongoDB
- Schemas
- Models
- Saving a Document
- Querying Documents
- Comparison Query Operators
- Logical Query Operators
- Regular Expressions
- Counting
- Pagination
- Updating Documents- Query First
- Updating a Document- Update First
- Removing Documents

## Module 2:Mongoose - Data Validation

- Validation
- Built-In Validators
- Custom Validators
- Async Validators
- Validation Errors
- SchemaType Options

## Module 3:Mongoose- Modelling Relationships Between Connected Data

- Referencing Documents Population
- Embedding Documents
- Using an Array of Sub-documents
- Transactions
- Object ID
- Validating Object ID's

## Module 4:Authentication and Authorization

- Introduction
- Creating the User Model
- Registering Users
- Using Lodash
- Hashing Passwords
- Authenticating Users
- Testing the Authentication
- JSON Web Tokens
- Generating Authentication Tokens
- Storing Secrets in Environment Variables
- Setting Response Headers
- Encapsulating Logic in Mongoose Models
- Authorization Middleware
- Protecting Routes
- Getting the Current User
- Logging Out Users
- Role Based Authorization
- Testing the Authorization

## Handling and Logging Errors Deployment

- Introduction
- Preparing the App for Production
- Getting Started With Heroku
- Preparing the App for Deployment
- Adding the Code to a Git Repository
- Deploying to Heroku
- Viewing Logs
- Setting Environment Variables
- MongoDB in the Cloud

# PHP Syllabus

## Module 1: Introduction to PHP

- Overview of PHP language
- History and evolution of PHP
- Setting up a PHP development environment (XAMPP, WAMP, MAMP)
- PHP syntax basics: tags, variables, constants, data types

## Module 2: Control Structures and Functions

- Conditional statements: if, else, elseif
- Looping structures: for, while, do-while, foreach
- Functions in PHP: defining functions, function arguments, return values, variable scope

## Module 3: Arrays and String Manipulation

- Arrays in PHP: indexed arrays, associative arrays, multidimensional arrays
- Array functions: array\_push, array\_pop, array\_merge, etc.
- String manipulation functions: strlen, strpos, substr, str\_replace, etc.

## Module 4: Form Handling and User Input

- Processing HTML forms using PHP
- Superglobal variables: \$\_GET, \$\_POST, \$\_REQUEST
- Form validation and sanitization techniques
- File upload handling with PHP

## Module 5: Sessions and Cookies

- Working with sessions in PHP
- Using cookies for user tracking and customization
- Session security considerations: session hijacking, session fixation

## Module 6: File Handling and Directory Operations

- Reading and writing files with PHP
- File and directory manipulation functions: fopen, fclose, fwrite, readdir, etc.
- Working with directories: opendir, closedir, mkdir, rmdir, etc.

## Module 7: Object-Oriented Programming (OOP) in PHP

- Introduction to object-oriented programming (OOP) concepts
- Classes and objects in PHP
- Constructors and destructors
- Inheritance, encapsulation, and polymorphism
- Access modifiers: public, private, protected

## Module 8: Database Integration with MySQL

- Connecting to MySQL database using PHP
- Executing SQL queries: SELECT, INSERT, UPDATE, DELETE
- Retrieving and displaying data from a database
- Error handling and database security considerations

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## Module 6: File Handling and Directory Operations

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- Working with directories: opendir, closedir, mkdir, rmdir, etc.

## Module 7: Object-Oriented

## Programming (OOP) in PHP

- Introduction to object-oriented programming (OOP) concepts
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## Module 8: Database Integration with MySQL

- Connecting to MySQL database using PHP
- Executing SQL queries: SELECT, INSERT, UPDATE, DELETE
- Retrieving and displaying data from a database
- Error handling and database security considerations

## **Module 4:Data Manipulation Language (DML)**

- Understanding databases and their importance
- Overview of relational database management systems (RDBMS)
- Introduction to SQL and its role in managing databases

## **Modul 5:Data Definition Language (DDL)**

- Modifying table structure using ALTER TABLE statement
- Dropping tables and databases using DROP TABLE and DROP DATABASE statements

## **Modul 6:Data Definition Language (DDL)**

- Modifying table structure using ALTER TABLE statement
- Dropping tables and databases using DROP TABLE and DROP DATABASE statements

## **Module 7: Constraints and Keys**

- Understanding constraints (e.g., NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY)
- Enforcing data integrity using constraints

## **Modul 8: Transactions and Concurrency Control**

## **Modul 9: SQL Best Practices and Optimization Techniques**

- Understanding transactions and their properties (ACID properties)
- Implementing transactions using COMMIT, ROLLBACK, and SAVEPOINT statements
- Managing concurrent access to data using locks
- Writing efficient SQL queries
- Indexing strategies for query optimization
- Avoiding common pitfalls and errors in SQL

## **Modul 9: Stored Procedures and Functions**

- Creating and executing stored procedures
- Creating and executing user-defined functions