BCA - Advance Diploma in SDLC

The syllabus given here is a general syllabus that is followed by most companies for hiring.

Semester - I

Logical Ability:

- Alphanumeric series
- Reasoning Analogies
- Artificial Language
- Blood Relations
- Calendars
- Cause and Effect
- Clocks
- Coding-Decoding
- Critical path
- Cubes and cuboids
- Data Sufficiency
- Decision Making
- Deductive Reasoning/Statement Analysis
- Dices
- Directions
- Embedded Images
- Figure Matrix
- Input-Output
- Mirror and Water Images
- Odd One Out
- Picture Series and Sequences
- Paper Folding
- Puzzles
- Pattern Series and Sequences
- Order & Ranking
- Seating Arrangements
- Shape Construction
- Statement and Assumptions
- Statement and Conclusions
- Syllogism
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Quantitative Ability:

- Data Interpretation
- Inequalities
- Percentages

- Number Series
- Arithmetic Aptitude
- Profit and Loss
- Simple Interest and Compound Interest
- Age Problems
- Work And Time
- Time & Speed
- Probability
- Mensuration
- Permutation and Combination
- Averages
- Ratios and Proportions
- Partnerships
- Stream Boat Problems
- Mixture and Alligation
- Pipes and Cisterns
- Coding and Decoding

Verbal Ability:

- Reading Comprehension.
- Cloze Test.
- Sentence Rearrangement.
- Antonyms and Synonyms.
- Error Detection.
- Idioms and Phrases.

Analytical Ability:

- Ranking & Time Sequence.
- Analogy & Data Sufficiency.
- Alphabet & Eligibility Test.
- Number Sequence.
- Coded inequality.
- Blood Relations.

Semester – II

Software Development Design and Coding:
(With Patterns, Debugging, Unit Testing and Refactoring)

Introduction to Software Development

- What is Software Development
- What Exactly we do here

Software Process Models

- Waterfall Model
- Iterative Model
- Evolving the iterative Model
- Risk: The Problem with Plan Driven Models
- Agile Methodologies
- Introduction to Extreme Programming
- Introduction to Scrum
- Introduction to Lean Software Development

Project Management Essentials

- Project Planning
- Task Estimates
- Status Reviews and Presentation
- Defects

Requirements

- Types of Requirements
- Requirements gathering in a Plan-Driven Project
- Requirements in an Agile Project
- Requirements Digging
- Analysing the requirements
- Preparation of the requirements Documents

Software Architecture

- General Architecture Patterns
- An object-Oriented Architectural Pattern

Design Principles

- The design Process
- Desirable Design Characteristics
- Design Heuristics
- Designers and Creativity

Structured Design

- Structured Programming
- Stepwise Refinement
- Modular Decomposition

- Design Patterns
- Patterns that we can use

Overview of Analysis and Design

Parallel programming

- Concurrency vs Paralleism
- Parallel Computers
- Parallel Programming
- How to write Parallel Programs

Code Construction

- A coding Example
- Functions and Methods
- Formatting, Layout, and styles
- General Layout issues and Techniques
- Refactoring
- Defensive Programming

Debugging

- What is an error?
- What not to do?
- An approach to Debugging
- Source code control
- Coding and debugging: Pair Programming

Unit Testing

- The problem with Testing
- The testing mindset
- When to test?
- What to test?
- Junit – A test framework

Code Review

- Walkthrough
- Code Reviews
- Code inspection
- Reviews in Agile Projects

Ethics and Professional Practice

- Introduction to Ethics
- Ethical Theory
- Ethical Drivers
- Case Studies

Semester – III

HTML (3rd Semester)

HTML is the basic and must-have skill-set for every web developer. It is used and extended by various other technologies. To be completely able to understand how things work in web development, you should develop an understanding of HTML. In this section, you will learn

- Introduction to HTML
- Browsers and HTML
- Editor's Offline and Online
- Tags, Attribute and Elements
- Doctype Element
- Comments
- Headings, Paragraphs, and Formatting Text
- Lists and Links
- Images and Tables

CSS(3rd Semester)

CSS is another important language amongst the web development trifecta. It will help you style, plan a layout and control the behaviour and look and feel of the web apps that you build. In this module, you will learn:

- Introduction CSS
- Applying CSS to HTML
- Selectors, Properties and Values
- CSS Colors and Backgrounds
- CSS Box Model
- CSS Margins, Padding, and Borders
- CSS Text and Font Properties
- CSS General Topics

Semester – IV

JavaScript (4th Semester)

The third one amongst the must learn trifecta, JS is present in about 90% of the internet. To make sense of what you're doing and to design and build new web apps, this language is used predominantly, and it is indispensable. In this section you will learn the following topics:

- Introduction to JavaScript
- Applying JavaScript (internal and external)
- Understanding JS Syntax
- Introduction to Document and Window Object
- Variables and Operators
- Data Types and Num Type Conversion
- Math and String Manipulation
- Objects and Arrays
- Date and Time
- Conditional Statements
- Switch Case
- Looping in JS
- Functions

ReactJS (4th Semester)

Reactjs is the best and most popular framework for front-end development. An integral part of the MERN stack, its community is great, and the demand for reactjs specialists is only increasing day-by-day. React is great for Rapid app development, SPAs and for creating awesome responsive and interactive web apps. In this topic you will learn:

- Introduction
- Templating using JSX
- Components, State and Props
- Lifecycle of Components
- Rendering List and Portals
- Error Handling
- Routers
- Redux and Redux Saga
- Immutable.js
- Service Side Rendering
- Unit Testing
- Webpack

Semester – V

NodeJS (5th Semester)

Nodejs is a great skill to have. It is JS based, and it completes the javascript full stack experience. It is a backend skill, which is in demand and pays well. In this module, you will learn the following:

- Node js Overview
- Node js - Basics and Setup
- Node js Console
- Node js Command Utilities
- Node js Modules
- Node js Concepts
- Node js Events
- Node js with Express js
- Node js Database Access

MongoDB (5th Semester)

This is a data driven schema-less NoSql database. It is a great tool to know. The syntax is very similar to javascript making it much easier to learn. You can use this for projects of any size and is also very easy to scale up or down depending on your requirements. In this module, you will learn:

- SQL and NoSql Concepts
- Create and Manage MongoDB
- Migration of Data into MongoDB
- MongoDB with PHP
- MongoDB with NodeJS
- Services Offered by MongoDB

Python (5th Semester)

Learn the basics of python and use it to develop applications. Also learn to work with mongodb in python. This additional language is a value-added skill as python is increasingly in demand for full stack projects. In this module, you will learn:

- Python Installation & Configuration
- Developing a Python Application
- Connect MongoDB with Python