CURRICULUM OUTLINE

THE BLUEPRINT TO SUCCESS

Our expert-led curriculum will prepare you for the toughest challenges that you may face in your journey to becoming a skilled programmer.

COURSE OUTLINE FOR BEGINNERS

11 MONTHS

Core Outline

Programming Language Fundamentals | **Duration: 2 Months**

Data Structures and Algorithms | **Duration: 4.5 Months**

SQL | **Duration: 0.5 Month**

Low Level Design and Project*

Fullstack | **Duration: 3.5 Months**

OR

Backend | **Duration: 3.5 Months**

System Design Essentials | **Duration: 0.5 Months**

Electives**(Optional)

High Level Design | **Duration: 1.5 months**

AND/OR

Data Engineering | **Duration: 2 months**

AND/OR

DSA for Competitive Programming | **Duration: 1 month**

AND/OR

Product Management for Engineers |
Duration: 1 month

* Only 1 Specialisation is allowed per learner. Recorded lectures for the other can be availed via Student Dashboard. At Least 1 Specialisation is mandatory for successful completion of the course.

** A learner can do as many electives as they want, but only after completion of Core Curriculum.

COURSE OUTLINE FOR INTERMEDIATE

11.5
MONTHS

Core Outline

Introduction to Problem Solving | **Duration: 2 Months**

Data Structures and Algorithms | **Duration: 4 Months**

SQL | **Duration: 0.5 Months**

Low Level Design**

Fullstack | **Duration: 2.5 Months**

OR

Backend | **Duration: 2.5 Months**

High Level Design | **Duration: 1.5 Months**

Capstone Project**

Fullstack | **Duration: 1 Month**

OR

Backend | **Duration: 1 Month**

Electives***(Optional)

DSA for Competitive Programming | **Duration: 1 month**

AND/OR

Product Management for Engineers | **Duration: 1 month**

AND/OR

Data Engineering | **Duration: 2 months**

* To be conducted in an inverted classroom model (recorded lectures alongwith Live doubt resolution sessions)

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COURSE OUTLINE FOR ADVANCED

9.5 MONTHS

Core Outline

Data Structures and Algorithms | **Duration: 4 Months**

SQL | **Duration: 0.5 Months**

Low Level Design**

Fullstack | **Duration: 2.5 Months**

OR

Backend | **Duration: 2.5 Months**

High Level Design | **Duration: 1.5 Months**

Capstone Project**

Fullstack | **Duration: 1 Month**

OR

Backend | **Duration: 1 Month**

Electives***(Optional)

DSA for Competitive Programming | **Duration: 1 month**

AND/OR

Product Management for Engineers | **Duration: 1 month**

AND/OR

Data Engineering | **Duration: 2 months**

* To be conducted in an inverted classroom model (recorded lectures alongwith Live doubt resolution sessions)

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CURRICULUM

DEEP DIVE

Curriculum Deep Dive for Beginners
(10.5 Months)

Program Timeline

Programming Language Fundamentals - 1.5 Months

- Introduction to Java
- Input Output and Data Types
- Operators
- Conditions
- Loops
- Pattern Problems
- Functions

- 1D and 2D Arrays
- Strings
- Memory Management
- Basic OOP for Problem Solving

Data Structures and Algorithms - 4.5 Months

- Introduction to Problem Solving
- Time and Space Complexity Analysis
- Array Problem Solving Patterns
- Bit Manipulation
- Maths for Problem Solving
- Recursion
- Backtracking
- Sorting
- Searching (Binary Search)
- Two Pointers

- Hashing
- String Problem Solving Patterns, String Pattern Matching
- Linked Lists
- Stacks
- Queues and Deques
- Trees and BST
- Tries
- Heaps
- Greedy
- Dynamic Programming
- Graphs

SQL - 0.5 month

- Relational Model
- CRUD
- Joins

- Aggregation
- Subqueries
- Views
- Transactions
- Indexing

Low Level Design and Project

Only 1 Specialisation is allowed per learner. Recorded lectures for the other can be availed via Student Dashboard. At Least 1 Specialisation is mandatory for successful completion of the course.

Backend - 3.5 Months

- Object Oriented Programming

- Multithreading
- Adv Java Concepts and Popular Interview Questions
- SOLID Design Principles
- Design Patterns
- UML Diagrams
- Schema Design
- How Internet Works (TCP, UDP, HTTP, Layering Architecture)
- API Design
- MVC
- Backend LLD and Machine Coding Case Studies
- Unit Testing
- ORM
- Deployment
- Git

Spring Boot

Interview Questions (Spring/Hibernate)

Capstone Project

OR Fullstack - 3.5 Months

HTML, CSS, Javascript

Advanced JS Concepts (OOP and Concurrency) and Popular Interview Questions

JS for Web Dev (DOM Manipulation, Event Handling)

Design Patterns

Git

React

Redux

How Internet Works (TCP, UDP, HTTP, Layering Architecture)

API Design

- Deployment
- Frontend LLD and Machine Coding Case Studies
- Testing
- Capstone Project

System Design Essentials - 0.5 months

- Introduction to Scale and Scaling Techniques
- Introduction to Caching Techniques
- Introduction to SQL and NoSQL Databases
- Introduction to Event Driven Architecture
- Introduction to Microservice Architecture

Electives (Optional)

A learner can do as many electives as they want, but only after completion of Core Curriculum.

High Level Design - 1.5 Months

- Consistent Hashing
- Caching
- CAP Theorem
- Distributed Systems & Databases
- SQL and NoSQL
- Scalability
- Zookeeper + Kafka
- Location Based Services (S3, Quad Trees)
- Microservices
- Case Studies

AND/OR Data Engineering - 2 Months

Building efficient Data Processing Systems

Advanced SQL

Cloud Services - AWS, or GCP

Developing ETL pipelines

Map-Reduce Framework

Big Data

Data Warehousing & Modelling

OLAP, Dashboarding

Workflow Orchestration

Logging, and Monitoring

MapReduce, HiveQL, Presto

Projects

AND/OR DSA for Competitive Programming - 1 Months

Combinatorics and Probability

- Matrix exponentiation
- Advanced Trees: Segment Tree, k-D Tree
- Disjoint Set Union
- Advanced Dynamic Programming
- Advanced Graphs: Bridges, Articulation point, Network Flow

AND/OR Product Management for Engineers - 1 Month

- Introduction to Product Management
- Product Thinking & Product Discovery
- Product Roadmap & Prioritization
- Mental Models for Product Managers
- Product Analytics
- Mixpanel
- Hands on Case Studies
- Delivery & Project Management

Practical ways to apply PM lessons as an Engineer

Curriculum Deep Dive for

Intermediate **(12 Months)**
Advanced **(10 Months)**

Program Timeline

Introduction to Problem Solving
(Starting point for Intermediate Batch) - 2 Months

Introduction to Problem Solving

Introduction to Time and Space Complexity

- Introduction to Basic Data Structures (1D and 2D Arrays, Strings, Hashmaps, Linked Lists, Trees)
- Introduction to Maths Problem Solving Patterns (Modular Arithmetic, Powers)
- Introduction to Bit Manipulation
- Introduction to Problem Solving Techniques (Prefix, Sliding Windows, Subarrays, Subsets, Subsequences, Sorting, Hashing, Recursion)
- Basic OOP For Problem Solving

Data Structures and Algorithms (Starting Point for Advance Batch) - 4 Months

- Time and Space Complexity
- Array Problem Solving Techniques
- Bit Manipulation
- Maths for Problem Solving

- Recursion
- Backtracking
- Sorting
- Searching (Binary Search)
- Two Pointers
- Hashing
- String and Pattern Matching
- Linked Lists
- Stacks
- Queues and Deques
- Trees and BST
- Tries
- Heaps
- Greedy
- Dynamic Programming
- Graphs

SQL - 0.5 Months

- Relational Model
- CRUD
- Joins
- Aggregation
- Subqueries
- Views
- Transactions
- Indexing

Low Level Design - 2.5 Months

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is mandatory for successful completion of the course.

OPTION 1 Backend

- OOP
- Multithreading
- Adv Lang Concepts and Popular Interview Questions
- SOLID
- Design Patterns
- UML Diagrams
- Schema Design
- How Internet Works (TCP, UDP, HTTP, Layering Architecture)
- API Design
- MVC

Backend LLD and Machine Coding Case Studies

OPTION 2 Fullstack

HTML, CSS, Javascript

Advanced HTML, CSS Case Studies

JS for Web Dev (DOM Manipulation, Event Handling)

Advanced JS Concepts (OOP and Concurrency) and Popular Interview Questions

Frontend Design Patterns

How Internet Works (TCP, UDP, HTTP, Layering Architecture)

API Design

Frontend LLD and Machine Coding Case Studies

Backend Design

High Level Design - 1.5 Months

- Consistent Hashing
- Caching
- CAP Theorem
- Distributed Systems & Databases
- SQL and NoSQL
- Scalability
- Zookeeper + Kafka
- Location Based Services (S3, Quad Trees)
- Microservices
- Case Studies

Capstone Project - 1 Month

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is mandatory for successful completion of the course.

OPTION 1 Backend

- Unit Testing
- ORM
- Deployment
- Git
- Spring Boot
- Project Interview Questions (Spring/Hibernate)
- Capstone Projects

OPTION 2 Fullstack

- Git
- React

Redux

Deployment

Testing

MongoDB

NodeJS

ExpressJS

Capstone Projects

Electives (Optional)

A learner can do as many electives as they want, but only after completion of Core Curriculum.

DSA for Competitive Programming - 1 Months

- Combinatorics and Probability
- Matrix exponentiation
- Advanced Trees: Segment Tree, k-D Tree
- Disjoint Set Union
- Advanced Dynamic Programming
- Advanced Graphs: Bridges, Articulation point, Network Flow

AND/OR Product Management for Engineers - 1 Month

- Introduction to Product Management
- Product Thinking & Product Discovery
- Product Roadmap & Prioritization
- Mental Models for Product Managers
- Product Analytics
- Mixpanel
- Hands on Case Studies

- Delivery & Project Management
- Practical ways to apply PM lessons as an Engineer

AND/OR Data Engineering - 2 Months

- Building efficient Data Processing Systems
- Advanced SQL
- Cloud Services - AWS, or GCP
- Developing ETL pipelines
- Map-Reduce Framework
- Big Data
- Data Warehousing & Modelling
- OLAP, Dashboarding
- Workflow Orchestration
- Logging, and Monitoring
- MapReduce, HiveQL, Presto

Projects