

DETAILED
CURRICULUM ➤

A Structured, Flexible & Guided Learning Program

For Tech Professionals to Accelerate Their Career



CURRICULUM BROCHURE

TABLE OF CONTENTS

For All Working Professionals	Page #
Context	2
Who Is This Program For?	4
What Does This Curriculum Offer?	5
Broad Curriculum Split For Advanced Batch	6
Broad Curriculum Split For Intermediate Batch	7
Curriculum Deep Dive	8

CONTEXT

Having the right skills can lead you to attain immense growth as a software engineer. Many tech professionals, like you, attempt to build their skills via the vast, and mostly free, resources available on the internet. Only to realize that these unstructured articles and videos lead to incomplete and shallow learning.

This is where we can help!

Scaler has developed a **structured curriculum** for software engineers, like you, to learn Programming Constructs, CS Fundamentals, and System Design (both HLD and LLD) via hands-on projects.

We believe that all our students, experienced and inexperienced, should have the opportunity of becoming great engineers. The curriculum is reverse engineered by analyzing what it takes to be a great software engineer and you are delivered a hands-on learning experience to make you - **job and career ready**.



CONTEXT

To ensure that you learn at a comfortable pace and are learning with peers that inspire you to work harder, we've split each Scaler Academy batch into three units (**Beginner, Intermediate, and Advanced**). Our Intermediate and Advanced Batches have been launched and we are accepting enrollments. We will launch the Beginner unit soon.

The key difference between Intermediate and Advanced Batch being the **eight weeks of additional Programming Constructs for the Intermediate section**. You will graduate with the same level of coding and software engineering proficiency, irrespective of whether you are in the Intermediate or Advanced Batch.

Learning duration

Advanced Batch	36 Weeks
Intermediate Batch	44 Weeks

However, the tuition fee for all sections stands the same.
Read on for further details.

WHO IS THIS PROGRAM FOR?

Professional Background

- ✓ Any amount of work experience
- ✓ In engineering roles at a software product company or in a development role at service companies

Coding Knowledge

- ✓ Comfortable coding in programming languages like C/ Java/ Python
- ✓ Comfortable writing if-else and loop-based implementation code and can manipulate basic strings
- ✓ Comfortable solving basic coding problems like printing patterns or finding a palindrome in a string
- ✓ May or may not be comfortable solving basic questions in Data Structures and Algorithms

The Mindset Needed to Gain Success with This Program

- ✓ Commitment to attend classes, solve assignments, work with peers and attend mentor sessions
- ✓ Open to learning
- ✓ Have a positive attitude, be willing to help, participate, and interact with peers
- ✓ Not for someone seeking just a job referral

WHAT DOES THIS CURRICULUM OFFER?

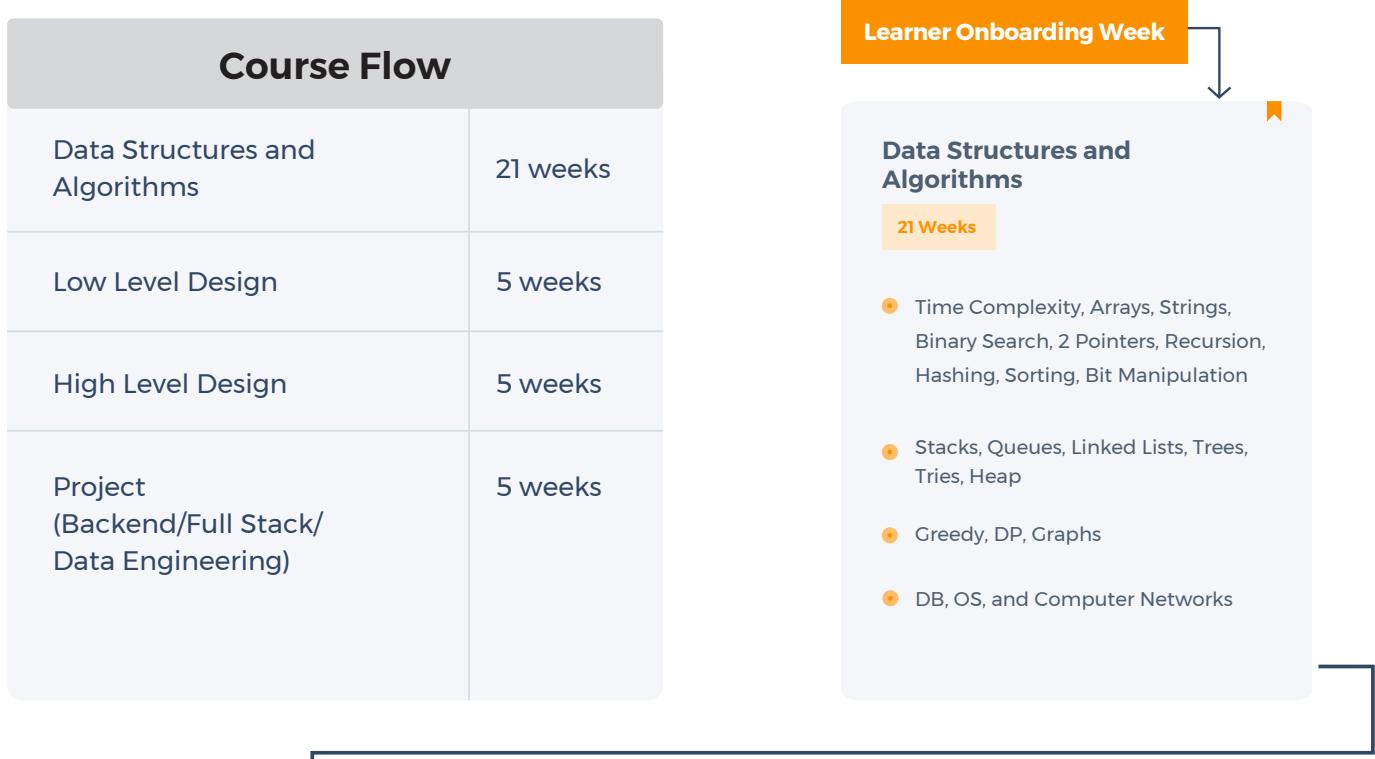
- ✓ **Thorough knowledge** of CS fundamentals (including DSA)
- ✓ **Specialization** in backend or full-stack and proficiency in System Design (HLD and LLD) to ensure you move to complex development projects within your firm or switch companies (and crack those interviews)
- ✓ **Confidence** to the content in-depth
- ✓ **Hyper-personalization** by segregating batches to ensure you learn at a comfortable pace
- ✓ **Healthy competition** amongst peers (includes weekly contests and assignments)
- ✓ Multiple **1:1 system design discussions with experts** (e.g., Senior Engineers at big tech firms)
- ✓ **Hands-on learning experience**
- ✓ **Real-life Projects** like creating an Uber-like app, an Amazon-like app, a Notes-like app, Facebook Messenger, and Facebook News-Feed-like systems help you implement the concepts taught

BROAD CURRICULUM SPLIT FOR ADVANCED BATCH



ENROLMENT OPEN

Typical learner profile: "I am good at coding. I know basic problem solving and DSA.
Can build basic to advanced applications"



Low Level Design

5 Weeks

High Level Design

5 Weeks

Choose your **Specialization**

Backend Specialization
5 Weeks

MVC, REST APIs, ORM, SpringBoot, Views, Database Indexes, Multithreading

Fullstack Specialization
5 Weeks

Building a server, intro to MVC, web architecture, HTML, CSS, Javascript, Node.js, Backend architecture, MongoDB, React / Redux

Data Engineering Specialization
5 Weeks

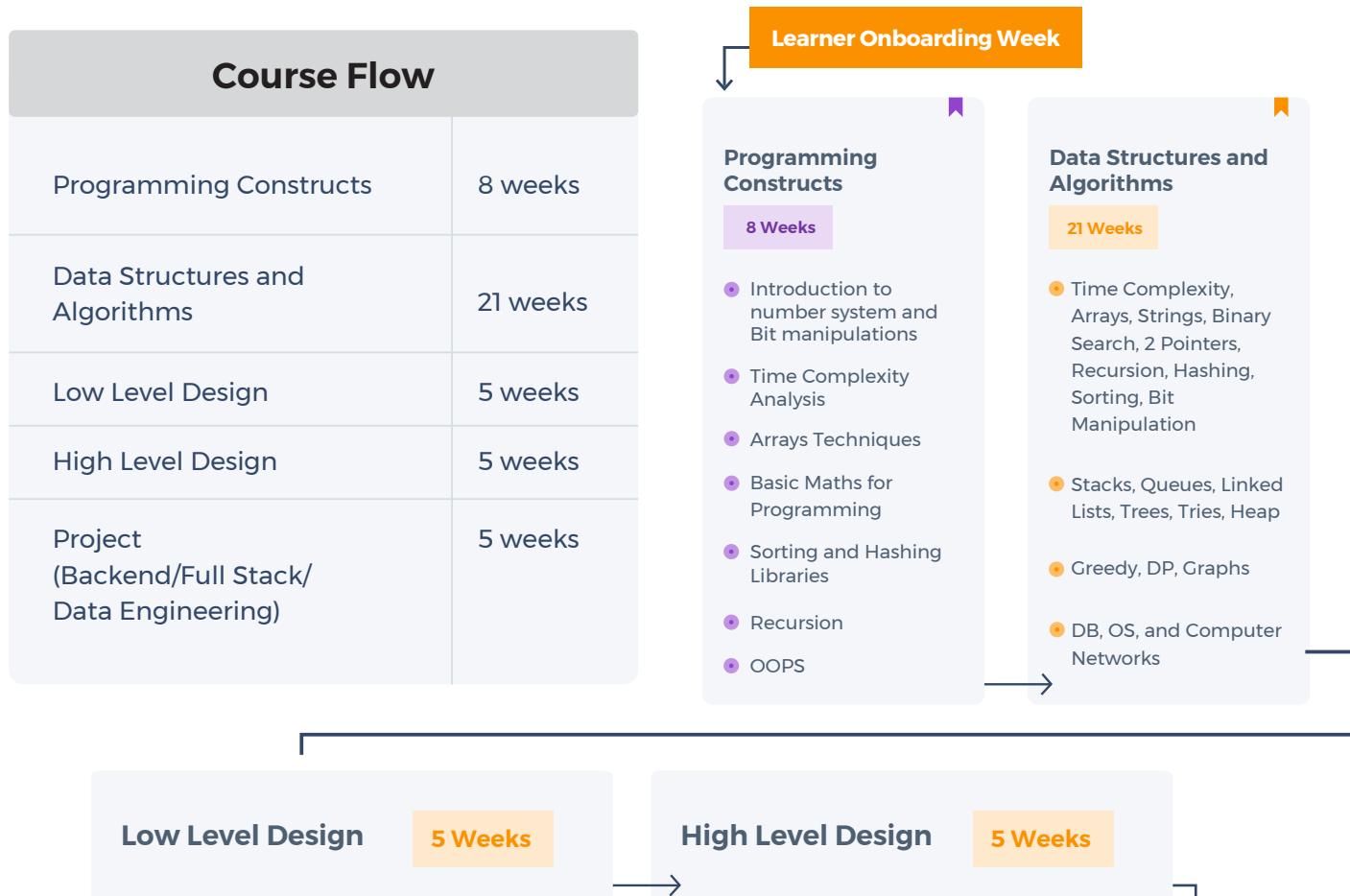
Building efficient Data Processing Systems, Advanced SQL, Cloud Services - AWS, or GCP, Developing ETL pipelines - Map-Reduce Framework, Big Data, Data Warehousing & Modeling, OLAP, Dashboarding, Workflow Orchestration, Logging, and Monitoring

BROAD CURRICULUM SPLIT FOR INTERMEDIATE BATCH



ENROLMENT OPEN

Typical learner profile: "I know coding in one programming language. Can build basic applications"



Choose your **Specialization** —————



CURRICULUM DEEP DIVE

COURSE MODULE

■ Programming Constructs - 8 weeks

Introduction to Problem Solving, Bit-Manipulation and Time Complexity	2 weeks
Array Techniques (prefix sum and carry forward)	2 weeks
Maths, Sorting and Hashing	2 weeks
Recursion and Problem Solving	2 weeks

*Programming Constructs is part of the curriculum for the Intermediate Batch and does not apply to learners in the Advanced Batch.

■ Data Structures and Algorithms - 21 weeks

Math, Time Complexity, Arrays, Strings, Binary Search, 2 Pointers, Recursion, Hashing, Sorting, Bit Manipulation	8 weeks
Stacks, Queues, Linked Lists, Trees, Tries, Heap	6 weeks
Backtracking, Greedy, Dynamic Programming, Graphs	4 weeks
Databases, Operating Systems, and Computer Networks	3 weeks

USP of our delivery

- ✓ **Weekly contests** to gauge your conceptual understanding and problem-solving abilities
- ✓ Particular focus on complex topics like Dynamic Programming and Graphs (e.g., traversals, shortest paths, etc.)

CURRICULUM DEEP DIVE

■ Low Level Design - 5 weeks

OOP, UML, Schema Design	3 lectures
Design Principles, SOLID	1 lecture
Design Patterns (Creational, Structural, Factory, Factory, Singleton)	4 lectures
Case Studies like BookMyShow, PayTM, Splitwise	7 lectures

USP of our delivery

- ✓ Real-world case studies and examples on large scale open source repositories
- ✓ Hands-on working code implementation in class for every case study
- ✓ TA Driven Code Reviews and Assignments
- ✓ Detailed discussions on Schema Designs, Design Principles and Practices

CURRICULUM DEEP DIVE

High Level Design - 5 weeks

Scaling (Horizontal vs Vertical), DNS Lookup/DNS Servers, Load Balancer, Consistent Hashing	1 lecture
Caching and CDN	2 lectures
CAP Theorem, Master-Slave, Multi-Master	2 lectures
SQL vs NoSQL DB	3 lectures
Zookeeper + Kafka, Quad Trees, Monoliths & Microservices	4 lectures
Case Studies on Real-World Systems	4-5 lectures

USP of our delivery

- Understand the internals of complex systems like Cassandra DB, Distributed File Systems
- Understand high-level view of real-world systems like Quora, FB Messenger, etc.

CURRICULUM DEEP DIVE

■ Specialization Projects (5 weeks)

In this module, you can choose one from these three specializations:

- ▶ **Backend Development**
- ▶ **Full-stack Development**
- ▶ **Data Engineering**

These specializations will be taught in a hands-on manner, where you will not only learn the concepts but will also be able to apply them to real-life projects.

▶ Specialization 1: Backend Development

MVC, REST APIs, ORM, SprintBoot, Views, Database Indexes, Multithreading.	4 weeks
Project Deployment	1 week

▶ Specialization 2: Full-Stack Development

Building a server, Intro to MVC	1 week
Web architecture, HTML, CSS, Javascript	2 weeks
Node.js, Backend Architecture, MongoDB, React/Redux	2 weeks
Project Deployment	1 week

CURRICULUM DEEP DIVE

USP of our delivery

- ✓ We focus on frameworks and help you become a Javascript expert which will enable you to excel in any role

► Specialization 3: Data Engineering

Intro to Data Engineering, Building efficient Data Processing Systems, Advanced SQL, Cloud Services - AWS or GCP	1 week
Developing ETL pipelines - Map-Reduce Framework, Big Data Hadoop, Kafka, Spark	2 weeks
Data Warehousing, Data Modeling, OLAP, Dashboarding	2 weeks
AWS/GCP Deployment, Workflow Orchestration - Apache Airflow, Logging, and Monitoring	1 week

USP of our delivery

- ✓ We focus on building foundational skills that will enable you to solve all the major problems pertaining to data storage and management
- ✓ Understand the complexities of developing end-to-end pipelines with hands-on experience

Note: We keep updating our curriculum as per the latest skills requirements of the industry.

SCALER

ACADEMY

CONTACT

admissions@scaler.com

www.scaler.com