Masters in Computer Science
Industry-Powered Curriculum

This is completely in-line with the existing Academy Curriculum. All the elective subjects/ modules of Academy will be mandatory in the Master's Degree Program.

Our experts from top-tech companies have carefully crafted the curriculum without compromising the academic standards. Neovarsity will train you to be a lifelong learner & evolve along with the industry.

Semester 1

Topics Covered	Topics Credits	Total Duration
Introduction to Computer Programming - Part 1	30 CREDITS	06 MONTHS
Introduction to Computer Programming - Part 2		
Introduction to Problem Solving - Part 1		
Introduction to Problem Solving - Part 2		
Mathematics for Computer Science		
Design and analysis of Algorithms		

Semester 2

Topics Covered	Topics Credits	Total Duration
Data Structures	30 CREDITS	06 MONTHS
Advance Algorithms		
Computer Systems and Fundamentals		
Low-Level Design & Design Patterns		
Practical Software Engineering		
System Design		

Curriculum Overview

Semester 3

Topics Covered	Topics Credits	Total Duration
Frameworks for Frontend Development	30 CREDITS	06 MONTHS
Advance Backend Development		
Data Engineering		
Product Management for SWE [Suggested]		
Capstone Project		

The highlight of Neovarsity's Master's Program is its real-world utility. We'll nurture you to understand cutting-edge research work & computational tools from first principles.

Eligibility & Certification

Neovarsity Welcomes You...

Our Master's program is diligently designed to meet the requirements of working professionals (1+ years of experience) looking to learn, upskill & grow. If you have a bachelor's degree (3 years or more) from any field non technical or technical you are eligible for the Master of Science in Computer Science

We don't expect you to have any programming experience as we'll take you through the concepts from scratch.

SCALER PLUS You get personalised Career Assistance from experts to shape your future better.

Want more details on the curriculum?

Check out Page 03- Page 11
for a deeper dive into our curriculum.

A Deeper Dive into the Curriculum

Scaler Neovarsity will prepare you to tackle the toughest challenges that Machine Learning engineers can face in their journey. Go through our detailed curriculum to understand how.

Note: Listed below is our Semester wise course structure with (Scaler Advantage)

Semester 1

01 Introduction to Computer Programming Part 1

TOPICS COVERED

Computer Programming 101, Control Statements (if/else). Getting started with loops, Loops II, Pattern Printing- 1, Pattern Printing- 2, Functions- 1, Functions- 2

SCALER ADVANTAGE

From logic and significance to control statements with loops and printing results, learn everything about Programming from scratch.

02 Introduction to Computer Programming Part 2

TOPICS COVERED

Getting Started with Arrays, Arrays- II, 2D Arrays I, 2D Arrays II, Strings I, Strings II, User Defined Datatypes (classes and objects), Pass Value vs Pass by reference and errors/why Main

SCALER ADVANTAGE

This is where you dive deeper into the world of Data types, classes and objects and everything Programming.

03 Introduction to Problem Solving - Part 1

TOPICS COVERED

Introduction to Problem Solving, Time Complexity- 1, Time Complexity- 2, Introduction to Arrays, Arrays: Carry Forward, Arrays: Sub Arrays, Arrays: 2D matrices, Arrays: Interview Problems, Bit Manipulations - 1, Bit Manipulations -2, Bit Manipulations - 3, Maths - Modular Arithmetic Introduction, Arrays and Maths

SCALER ADVANTAGE

Dig deep into time, space complexity, and manipulation bits and solve basic problems with Programming.

04 Introduction to Problem Solving - Part 2

TOPICS COVERED

Sorting, Strings, Hashing -1, Hashing-2, Recursion -1, Recursion- 2, Linked Lists - Basics. Stacks and Queues- Basics, Trees Basics- 1, Trees Basics -2, Subsequences & Subsets

SCALER ADVANTAGE

Step into the world of Data Structures by learning to solve problems using Programming tools. Arrange data using Sorting, Hashing, and other methods.

05 Mathematics for Computer Science

TOPICS COVERED

Divisibility Rules, Modular Arithmetic, Invert Mod by Fermat Theorem, Prime Numbers, Fibonacci Numbers, Matrix Exponential, Combinatorics, Probability

SCALER ADVANTAGE

Gain fundamental clarity of crucial mathematics concepts and solve Programming problems like a pro.

06 Design and Analysis of Algorithms

TOPICS COVERED

Sorting- Selection Sort vs Bubble Sort, Merge Sort, Insertion Sort, Count Sort, Binary Search, Pointers, Hashing, Strings and Pattern Matching, Problems on Strings with Hashmaps

SCALER ADVANTAGE

Learn to design programs by finding the most efficient ways to manage data using High-Level and Low-Level Design algorithms.

Semester 2

01 Data Structures

TOPICS COVERED

Recursion, Stacks, Queues, Linked Lists, Trees, Heap

SCALER ADVANTAGE

Manipulate, manage & organise data in various formats for the most efficient solutions to business problems.

02 Advance Algorithms

TOPICS COVERED

Greedy Algorithms, Dynamic Programming (DP), Bottom-up DP, Top Down DP, Knapsack, Strings, Catalan Numbers, Graph Theory, Graph Colouring, BiPartite graph, Topological Sort, Dijkstra

SCALER ADVANTAGE

Delve deeper into the world of algorithms and learn about Dynamic Programming, Graph Theory and other important Computer Science Algorithms

03 Computer Systems and Fundamentals

TOPICS COVERED

Database management system, Operating Systems - Process, Threads and synchronisation, Memory Management, Layered Architecture of Internet, Application Layers - HTTP & DNS, TCP, UDP, IP, Socket programming.

SCALER ADVANTAGE

From exploring the basics of Computer Systems to learning the know-how of Operating Systems; ace high-profile interviews at top companies.

04 Low-Level Design & Design Patterns

TOPICS COVERED

Approaching Low-Level Design Problems, Designing a Pen, Design TicTacToe, Snakes and Ladders. Design a Parking lot, Bookmyshow. Email Campaign Management System, Design Splitwise, Design a Distributed Cache

SCALER ADVANTAGE

Explore the world of Low-Level Designing by learning to design basic gaming apps.

05 Practical Software Engineering

TOPICS COVERED

Implement Low-Level Design problems. Coding Walk-through Sessions- A Pen, Tictactoe, Snakes and Ladders, Parking lot, Bookmyshow, Email Campaign Management System, Splitwise, Distributed Cache.

SCALER ADVANTAGE

Implement Low-Level Design problems. Coding Walk-through Sessions- A Pen, Tictactoe, Snakes and Ladders, Parking lot, Bookmyshow, Email Campaign Management System, Splitwise, Distributed Cache.

06 System Design

TOPICS COVERED

High-Level Design, Basics & Consistent Hashing, Caching, CAP Theorem & Master and Slave, SQL vs NoSQL, NoSQL, Case Study on HLD, Multi-Master, Case Study, Zookeeper + Kafka, Elastic Sketch Case Study, Quad Trees, Design Distributed Crawler, Hotstar, Microservices & Containerisation, IRCTC System Design.

SCALER ADVANTAGE

Learn to design a complete system where you decide how the system works and what all components will be used, and become an expert at creating new systems and build softwares from scratch.

Semester 3

01 Frameworks for Frontend Development

TOPICS COVERED

How the Internet Works, Java Script -1, Java Script -2, React, React/Redux

SCALER ADVANTAGE

Become an expert at building applications that create real-world by learning the fundamental building blocks of Frontend Software Applications

02 Advance Backend Development

TOPICS COVERED

Project Townhall, Network Fundamentals & Web Fronted Basics, Project Structure & Controllers, Services Dependency Injection and Error Handling, Project: Task Manager, Models, Entities & Repositories, Working with databases, Layer and feature wise project structure, Project: Blogging Websites - Rest API, KWT Cookies. Authentication and Web Security Config, Testing Strategies, Dockerization, Project: Event Ticketing System, Deploying to Cloud Services.

SCALER ADVANTAGE

Dig deep into the most important layers of Software Architecture by learning the fundamental building blocks of a Backend Development. `

03 Foundations of Data Engineering

TOPICS COVERED

Data Engineering Lifecycle, Cloud essentials, SQL, Data Warehousing, Data Modelling, Facts and Dimension Tables, Hadoop Ecosystem, Big Data Processing, Map Reduce, Spark(PySpark), Apache Kafka, Hive, ETL Pipeline, Apache Airflow, Stream Processing, Grafana/Tableau dashboarding.

SCALER ADVANTAGE

Learn how to collect, store and analyse data on a large scale directly from Cloud and deploy them on Cloud storage.

04 Product Management for SWE

TOPICS COVERED

Introduction to Product Management, Product Thinking, Product Discovery, Product Roadmap and Prioritisation, Mental Models for Product Managers, Hands-on Case Study, Product Analysis -1 and Product Analysis - 2, Hands-on Session - MixPanel, Delivery and Project Management, Practical ways to apply PM lessons as an Engineer.

SCALER ADVANTAGE

From understanding various methodologies to managing large projects; gain real-world exposure and industry insights by working with top project managers and experts.

05 Capstone Project

TOPICS COVERED

Problem Statement - Literature Review- 8 Days, Design Schema- 18 Days - Building API, Complete Integration and Deployment- 30 days

SCALER ADVANTAGE

Put your knowledge and coding skills to test by building a real-world application from scratch.

End

#CreateImpact

THANK YOU

SCALER

WWW.SCALER.COM