

Become a Software Engineer

Software Engineering Syllabus



Table of contents

Career Training

An 8-month intensive training program to equip you with the essential Software Engineering skill set and to get you job-ready. You will learn the fundamentals of Software Engineering, get hands-on experience, and develop a stellar portfolio with real-world projects that are sourced from the world's leading tech companies.

SE101	Tech Fundamentals	3
SE102	Intermediate Python	3
SE103	Databases & Backend	3
SE104	Advanced Python & NoSQL	4
SE105	Architecture & Deployment	4
SE106	Final Project & Advanced Topics	5
SE107	Frontend & UI	5

Career Accelerator

Following your training you will join our Career Accelerator, where you will be searching for a full-time Software Engineering job. You will continue to develop your technical skills and gain more experience while taking part in extensive career workshops and one-on-one mentorship sessions.

Endless Career Growth

Our goal is to ensure that you build an inspiring career. This means that we're here for you even after you've been hired for your first role. As our graduate, you will become a part of our vibrant alumni community, gain access to exclusive events and workshops, and get the undivided support of our team whenever you start thinking about the next step in your career journey.

SE101

Tech Fundamentals

During the first unit of our program, we will lay the groundwork with the fundamentals you will need to succeed in the program. Learn the basics of Python and computer networking. Understand how the internet works, begin to practice algorithmic thinking and complete your first projects. In addition, this unit will teach you time management skills, touch typing, and how to use keyboard shortcuts to control your computer effectively.

Concepts

- | | |
|--|--|
| <ul style="list-style-type: none">- <i>HTML</i>- <i>CSS</i>- <i>HTTP</i>- <i>Algorithmic Thinking</i> | <ul style="list-style-type: none">- <i>Clean Code</i>- <i>Python Fundamentals</i>- <i>SDLC (Software Development Life Cycle)</i> |
|--|--|

SE102

Intermediate Python

In this unit, you will learn how to use the requests library in Python to create real-world applications. The requests library is a powerful tool that allows you to make HTTP requests in Python. In addition, you will learn about testing in Python and how to control your source code with Git.

Concepts

- | | |
|--|---|
| <ul style="list-style-type: none">- <i>Debugging</i>- <i>Testing</i>- <i>Python Intermediate</i> | <ul style="list-style-type: none">- <i>Object Oriented Programming</i>- <i>Version Control</i> |
|--|---|

Technologies & Frameworks

- | | |
|--|--|
| <ul style="list-style-type: none">- <i>Git</i> | <ul style="list-style-type: none">- <i>Python Requests</i> |
|--|--|

SE103

Databases & Backend

In this unit, you'll learn how to work with databases by building CRUD (Create, Read, Update, Delete) applications with a RESTful API using PostgreSQL. You'll start by learning the basics of PostgreSQL and how to set up a development environment.



Then, you'll learn how to design a database, write queries, and build a simple CRUD application. You will learn about Flask, a widely used web server library in Python, and to apply Test Driven Development in your code.

Concepts

- Relational Databases
- SQL
- Normalization
- Agile
- Test Driven Development (TDD)
- Flask
- PostgreSQL
- RestAPI

Technologies & Frameworks

- Flask
- PostgreSQL
- RestAPI

SE104

Advanced Python & NoSQL

This unit takes you through everything you need to know about advanced Python, starting with the basics of OOP. You will learn about design patterns and how to apply them in Python. You will also learn how to use MongoDB to create NoSQL applications, which is another type of database.

Concepts

- Design
- SOLID
- Design Patterns
- Multithreading
- AsyncIO
- NoSQL

Technologies & Frameworks

- Git
- MongoDB

SE105

Architecture & Deployment

This unit will teach you how to deploy code to the cloud using industry-grade technologies, such as Docker. You will also learn about Microservices and Serverless architecture.

This unit will cover the following topics:

- What are Microservices?
- What is Serverless architecture?
- How to deploy code to the cloud using Docker?

Concepts

- Authentication & Authorization
- Security
- Message Brokers
- Cloud
- Microservices
- Serverless

Technologies & Frameworks

- AWS
- Kafka
- Jenkins
- Linux
- Docker

SE106

Final Project & Advanced Topics

Your capstone project will be an opportunity to show off everything you've learned in the training. You'll be able to use all of the tools and techniques you've acquired to build a project that demonstrates your mastery of the material. This is your chance to shine and show what you're capable of!

Concepts

- *Big O Notation*
- *Data Structures*

SE107

Frontend & UI

React is a powerful Javascript frontend framework that allows developers to create component-based web applications. In this course, you'll learn the fundamentals of React, including how to create components, manage state, and work with external data. By the end of this course, you'll be able to build production-ready React applications.

Concepts

- *Javascript*
- *DOM and Events*

Technologies & Frameworks

- *ReactJS*
- *Redux*



Career acceleration to land your first Software Engineering role, and beyond.

During the Career Accelerator, you will be actively looking for your first full-time Software Engineering role. You will be learning everything you need to know about how to get hired for your dream job at a top tech company, while continuing to develop your technical and soft skills. Our goal here is to make you the ideal candidate for the role you are after, and to help you start your career as early as possible.

Career Workshops

Participate in extensive live workshops that are focused on developing your “elevator pitch”, activating your personal and professional networks, learning job search and salary negotiation strategies, setting weekly goals, and more.

Squad Sessions

Join a Squad of a small number of your fellow students for weekly group sessions to share advice and drive each other forward. Squad Leaders are industry experts who bring their squad members from being job-ready to getting hired. You will meet your Squad Leader in Squad meetings and 1:1 sessions.

Advanced Learning

Continuous advanced training to keep sharpening your skills and expanding your experience and expertise, with additional challenges and projects to add to your portfolio. Topics include: Advanced Frontend, Databases, React, Serverless, MongoDB, AWS, Testing Frameworks.

Interview Preparation

Master your industry technical proficiency and your Human Resources interviewing skills through taking part in live mock-interview simulations and receiving insightful, personal feedback from industry experts.

Job Search Toolkit

Be a pro candidate by tracking your opportunities, managing your job interview process, building your portfolio, and showcasing your projects with the best tools on the market to organize and accelerate your job search.

Masterschool's Career Week

Attend our Career Week where you'll be able to meet representatives from leading tech companies that are looking to hire our graduates.

“

*All of our dreams can come true
if we have the courage to pursue them.*

Walt Disney