Become a *Software Engineer*

Software Engineering Syllabus

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Our 8-month intensive training program will equip you with the essential Software Engineering skill set and 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.

Tech Fundamentals

During the first unit of our program, we will lay the groundwork with the fundamentals you will need for any career in tech. Learn the basics of programming with Python. Understand how the internet works, begin to practice algorithmic thinking, and complete your first projects. Another big focus of this unit is motivation. Hear from industry experts and from Masterschool's own graduates. They will share more about the rewarding career at the end of this journey.

Concepts covered:

- Algorithmic Thinking

- Functions

- Lists

- Logic Operators

- Python Fundamentals

- Variables

Intermediate Python

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In this unit, we will take a deep dive into the Python programming language. We will learn about new data structures, loops, and focus on how to break down a big problem into smaller units using functions. During this Unit we will create our offline workspace with PyCharm and learn how to use the Python Interactive Shell effectively.

Concepts covered:

- Debugging

- Dictionaries

- Lists

- Main function

- Python Functions

- Python Interpreter

- Strings

- Tuples

- While Loops

Advanced Python

In the first part of this unit, we will build the first piece of our dynamic training-long project. Next, we will focus on best practices for creating a clean and documented code, and maintain version control with Git. In the last part, we'll learn how to use Python to read files and create complex data structures.

Concepts covered:

- Coding standards

- Documentation

- Exceptions

- Files

- Nested Structures

- Version Control

Intro to Web
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In this unit, we will learn how the web works, focusing on the three basic building bricks - HTTP protocol, HTML and CSS. Next, we'll learn how to use Python to get data from online sources and API's, analyze it, and extract the interesting parts.

Concepts covered:

- API

- CSS

- HTML

- HTTP

- JSON

- Chrome Developer Tools

Object Oriented Programming

In this unit, we'll introduce the programming paradigm of Object Oriented Programming. We'll also learn about Unit Testing with the "pytest" library.

Concepts covered:

- Object Oriented Programming

- Properties and Magic Methods

- Version Control

- Unit Testing

Web Applications
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In this unit, we'll create our very first web application. We'll learn about Flask, a widely used back-end framework in Python, and use it to build a CRUD (Create, Read, Update, Delete) application. Using HTML Templating, we'll create the front-end part of our web app.

Concepts covered:

- Web Server

- CRUD

- Flask

- REST

- CSR and SSR

- Routes

- Templating

- Postman

Databases

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In this unit, we'll learn how to create and work with databases. We'll start by learning the basics of Relational Database Design and SQL. Then, we'll learn how to design a database and query it using Python. Finally, we'll learn how to connect a web application to a database.

Concepts covered:

- Relational Databases

- SQL

- SQLite

- ORM

- SQLAlchemy

JavaScript

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In this unit, we will learn a second language - JavaScript. We'll start with the basics of the language, and then learn how to write JS code inside HTML files, which manipulates the DOM (The elements tree) of the page. Then, we'll learn about Async functions, a vital aspect of modern Front End Development.

Concepts covered:

- NodeJS

- DOM Manipulation

- Async functions

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 for your portfolio. Topics include: Javascript, React, NodeJS, MongoDB, Serverless.
Interview Preparation	Master your industry technical proficiency and your personal 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.
Our 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.