



Software Engineering

Master the art of coding. Transform your ideas into elegant solutions and robust applications. Become the architect of tomorrow's digital innovations

📍 Remote

🕒 Full time

📅 8 months

Program *principles*

Fundamentals First

Programming languages and technologies change frequently. Fundamentals don't. Our approach is not to quickly cover many frameworks simply for the sake of adding lines to your CV. Rather, we concentrate on providing a thorough and deep-rooted understanding of the core principles of programming and technology. With these fundamental skills, you'll be better equipped to smoothly adapt and shift to emerging technologies.

Hands On

The best way to learn to code is by doing. In our program, you will write *a lot* of code. Once a week, an instructor will review your code, providing personalized feedback. Through this continuous cycle of practice and feedback, you effectively evolve into a proficient programmer.

Industry-Relevant Curriculum

We constantly talk with team leaders and recruiters to better understand industry needs and emerging trends. Our syllabus is constantly evolving.

Expert Mentors

You'll regularly meet with your private mentor. Our mentors are industry professionals who will provide tutoring in programming, support your learning habits, and guide your journey into software engineering.

Program *highlights*

Career Track

All throughout the program, we will spend time preparing you for job searching in the field of Software Engineering. We'll work on your "elevator pitch", build extensive online profile including Resume and LinkedIn and GitHub profiles, and prepare you for the tech interview process.

Group Hackathons

Once a month, we pause our regular schedule to host a special event where we work in groups on real-life projects. During these events, we learn how to work as a team, divide responsibilities, and also remind ourselves that programming is not only educational but also a lot of fun!

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: Linux, NoSQL and MongoDB, Image manipulation, Serverless, and more.

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.

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

- Python Fundamentals - Learn the basics of programming, including syntax, data types, and simple operations.
- Algorithmic Thinking - Develop problem-solving and logic-building skills using algorithms.
- Looping - Learn how to create repetition in your code using for loops.
- Intro to HTML + CSS - We'll introduce the basic building blocks of web pages.
- Strings and Lists - Learn about two sequential data types in Python.
- Functions - Creating reusable code blocks and understanding how functions work.

Intermediate Python

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

- Working with Offline IDE: Learn to set up PyCharm and utilize an Integrated Development Environment for efficient coding and project management.
- Python Interpreter: Understand how to use the Python interpreter for executing scripts and experimenting with code snippets.
- Debugging: Master various debugging techniques using IDE tools and alternative methods to troubleshoot code effectively.
- Importing Modules: Learn to enhance functionality by importing and utilizing both built-in and third-party Python modules.
- Main and Functions: Understand the best practices for structuring code, separating logic into functions, and writing a coherent main function.
- Complex Types - Learn about more complex data types like dictionaries, tuples, and sets for sophisticated data handling.
- Loops: Explore the concepts and applications of while loops and nested loop structures for complex iterative operations.

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:** Learn best practices for writing clean, readable code and effective documentation for maintainability and collaboration.
- **Exception Handling:** Master techniques to handle and manage exceptions in Python for robust and error-resistant programming.
- **Nested Structures in Python:** Understand the intricacies of nested data structures like lists of dictionaries, and how to manipulate them effectively.
- **Working with Files:** Gain skills in file handling, reading, and writing data to files in Python for data persistence and manipulation.

Intro to Web

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

- Internet & HTTP : Explore the foundations of web technology and HTTP communications.
- HTML + CSS - Dive deeper to HTML and CSS, the basics of web page structure and styling.
- JSON - Understand JSON format for data representation and exchange.
- API - Learn how to use APIs for dynamic and interactive applications.
- Intro to AI with Python - Beginner-friendly introduction to AI concepts using Python.

Technologies

- Chrome Developer Tools
- Postman
- Requests module

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 - Fundamentals of OOP paradigm, , including its four foundational pillars.
- Properties and Magic Methods - Explore Python's special methods for custom behavior data objects.
- Version Control - Learn to track and manage code changes to collaborate effectively in software development using Git.
- Unit Testing with - Learn robust testing methodologies using pytest.
- TDD - Introduction to Test-Driven Development.

Technologies

- Git commands
- GitHub
- Pytest

Web Applications

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 servers with Flask - Set up and manage web servers using the Flask framework.
- CRUD - Master the basics of data handling: Create, Read, Update, Delete in web apps.
- Flask routing and templating - Explore URL routing and HTML templating with Flask.
- Creating an API - Develop skills to build and deploy APIs using Flask.

Technologies

- Flask
- Jinja
- CSR and SSR
- REST API's

Databases

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

- Intro to Databases - Fundamental concepts, uses, and exploration of different types of database systems.
- Relational Databases Basics - Understand the structure and principles of relational databases.
- SQL - Learn SQL language for database querying and management.
- ORM - Utilize SQLAlchemy for Object-Relational Mapping in Python applications.

Technologies

- SQL
- SQLite
- SQLAlchemy

JavaScript

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

- JS Basics - Fundamental concepts and syntax of JavaScript programming.
- DOM manipulation with JS - Learn to interact and modify web page elements using JavaScript.
- JS async functions - : Understanding asynchronous operations and promises in JavaScript.
- Creating responsive front end - Build dynamic front-ends that interact seamlessly with a Flask-powered API.

Technologies



NodeJS



OpenAPI

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 Guidance

We'll continue sharpening your "elevator pitch", help you adjust your resume for every job, create a job hunting strategy and monitor your activity in the job market.

Mastery Learning

Continuous mastery training to keep sharpening your skills and expanding your experience in the direction *you* choose. Topics include: React, Full Stack development, Cloud Deployment with AWS and Docker, NoSQL Databases and more.

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.



 Masterschool