QUICKSTART

Over 35 years in Technology Education

Software Engineering Bootcamp

CURRICULUM GUIDE

WHAT DOES A SOFTWARE ENGINEERING CAREER ENTAIL?

Software engineers develop and maintain computer systems and application software, including web applications, mobile applications, robots, and operating and network systems. A highly technical branch of computer science, software engineers create, conceptualize, program, document, test, and upgrade software and its components.



WHY STUDY SOFTWARE ENGINEERING?

A popular branch of computer science, software engineering is one of the fastest-growing fields today. The U.S. Bureau of Labor Statistics projects 25% employment growth of software engineering roles over the next ten years, with as many as 189,200 positions open annually. With an average starting salary of $79,000 (PayScale, 2022), pursuing this in-demand profession offers a significant return on investment.

The best part? While 70% of software engineering roles require a bachelor's degree (Cyberseek, 2022), opportunities to upskill and start a new path or advance within the field are readily available through QuickStart. From healthcare to hospitality, almost every industry today relies on software engineers to build and maintain the systems, structures, and websites necessary to function. Whether you're interested in building tomorrow's cyber defense software or clinical applications that promote patient health, software engineering can offer you a dynamic and fulfilling career path.

Our Software Engineering Bootcamp offers immersive training in the top skills employers look for in software engineers, including computer architecture, data structures and algorithms, and designing and developing websites.

The 23-week software engineering bootcamp will equip you with technical knowledge of front-end and back-end development to help you accelerate your career within the field. You'll have access to career services from the start of the program to help you land your next role.

WHO IS THIS BOOTCAMP FOR?

Designed for a range of experience levels, the Software Engineering Bootcamp offers value to both entry-level programmers and junior to mid-level computer science professionals.

For those with little to no coding experience, this bootcamp provides comprehensive training in software engineering skills and exposure to real-world projects and assignments. The curriculum covers computer science foundations before advancing to front and back-end development coursework and offers a hands-on opportunity to determine if this field is the right fit for you.

Professionals with a few years of web development experience who want to pursue software engineering as a long-term career can also benefit from this bootcamp. Aligned with industry certifications and skills, this bootcamp offers the advanced skills you need to accelerate your career.







Course Structure

By combining the best of online learning with collaborative modules, our program offers the flexibility and rigor you need to start your career in software engineering. Throughout the 23-week program, you will attend live online lectures and apply class concepts through virtual hands-on labs and project assignments. With the support of instructors, you will develop the framework to solve problems software engineering professionals face daily.



Virtual Office Hours

While most of your bootcamp can be completed on demand and at your own pace, your instructors will reinforce asynchronous lessons with virtual office hours. These live, instructor-led mentoring session offer you the opportunity to ask questions, receive immediate support, and advance your understanding of the course concepts.



Course Learning Tracks

As an online bootcamp student, you will have the option to choose between three modes of virtual instruction:

- Immersive: This learning format features two, 2-hour live mentoring (virtual office hour) sessions per week.

- Flex: Students attend one, 2-hour live mentoring (virtual office hour) session per week.

- On-demand: Students complete five, 30-minute mentoring (virtual office hour) sessions on their own schedule.

Regardless of the mode of instruction you choose, you will have access to a dedicated bootcamp discussion forum to collaborate and seek help from industry experts and other students.



Virtual Hands-On Labs

When it comes to mastering new technical skills, the best way to learn is by doing. Your software engineering bootcamp will feature several lab assignments that allow you to apply course concepts in a virtual environment.

Projects & Assignments

Your portfolio signals to employers that you possess the front-end application, and back-end development skills to hit the ground running in a new role. Throughout your bootcamp, you will build a substantial portfolio of projects that demonstrate your technical proficiency in the leading software engineering programs and tools.

Throughout the program, you will work independently on a series of applied capstone projects. Students are encouraged to pursue capstone project topics that interest them, and work alongside a mentor to complete the portfolio-ready assignment.



Career Services

You will have access to a suite of resources, including a career services platform featuring job opportunities and a talent portal where hiring organizations can contact you, resume review and feedback, assistance updating your LinkedIn profile, mock interviews, and guidance on how to market your new software engineering skills. Our team will also help you develop a portfolio for prospective employers and identify job opportunities. You will also have the opportunity to schedule individual sessions with a career coach, when needed.



Course Outline

Week 1

- Principles of Software Engineering I: Principles of Engineering, Software Development Lifecycle

Take a deep dive into the foundations of software engineering in the first week and explore the implications of engineering in relation to the quality of work developers can deliver. This course will cover the software development lifecycle, including requirement, specification, design, implementation, verification, validation and maintenance.

Week 2

- CompTIA IT Fundamentals+
- Starting with Git & GitHub

In your second week, learn about computing devices and how to troubleshoot common issues related to networks, the internet and basic device operation. This course will also cover security, safety, preventative maintenance and the basics of databases and programming. You will also cover the foundations of Git and GitHub, which are key to regulating projects.

Week 3

- Introduction to Web Development
- Introduction to HTML and CSS

Build your experience using HTML and CSS elements in week three coursework. The foundational components of development and design you learn in this course will prepare you for more advanced skills in later coursework.

Week 4

- Introduction to UX and Product Management
- Introduction to Bootstrap

This week will cover the stakeholders involved in the software development lifecycle, and introduce you to Bootstrap, the world's most popular framework for building responsive, mobile-first sites. You will begin work in Bootstrap CDN and work on a template starter page.

Week 5

Capstone Project 01: Basic Business or Personal Website

Week 6-8

- Fundamentals of Modern JavaScript – ES6 and Beyond
- Dynamic and Interactive Web Pages – Beginners JavaScript DOM
- JavaScript Async

Course Outline

Expand your knowledge of JavaScript in weeks 6-8 of the program. This course will cover data types and variables, sequence, selection, iteration, and working with functions in modern JavaScript.

Week 9 Capstone Project 02: Website with a Search Engine

Week 10

- Data Structures and Algorithm Theory
- Principles of Software Engineering II: System Design

Learn the efficiency and application of data structures and algorithm theories to solve standard software engineering problems. This course will cover the science of evaluating the use case of algorithms, as well as coursework introducing the elements and details of system design.

Week 11

- JavaScript Objects and OOP Programming with JavaScript
- Principles of Software Engineering III: Software Design, UML

Learn to manage and reduce the complexity of software using object-oriented programming (OOP) in week 11. In this course, you will study and apply Java Script objects, using objects to encapsulate data and operations, prototype extensions and inheritance, and JavaScript class syntax.

Week 12-13

- Introduction to React
- React Router and Redux

This course will provide you with the fundamental knowledge of the React.js, JavaScript framework. Core concepts will be applied through hands-on assignments. Some assignments will reinforce the principles of developing client side reach web applications by using React. There will also be course assignments that will help students to learn more advanced React concepts to develop and maintain good solid web applications utilizing React.

Week 14 Capstone Project 03: Task Management and Web App

Week 15

- Scrum and Agile Immersion

Embrace the Agile concepts of adaptive planning, iterative development and continuous improvement in this course. You will learn the tools and task management best practices to drive early deliveries and value to customers.

Course Outline

Week 16-17

- Introduction to Python
- Learn Python Django from Scratch

Explore the fundamentals of programming using Python. This course will cover best practices for coding style and documentation, comprehensions and iteration, context managers, fake files, Python libraries, third-party packages, object-oriented programming, and more.

Week 18

Capstone Project 04: Python Django

Week 19

- Querying Data with SQL

In this course, you will learn the skills to write basic SQL or Transact-SQL queries, a key competency for data developers, scientists and engineers.

Week 20

- Node.js - From Zero to Web Apps

Write server-side, high performance and networked applications using the NodeJS platform. This course will prepare you with the tools to develop for platforms including LinkedIn, Yahoo, Microsoft and more.

Week 21

- Introduction to FAST API's

In this course, learn how to use FAST API as an architectural style for application program interfaces (API) that use HTTP requests to access and use data. You will build the foundation to read, update, create and delete data types.

Week 22-23

Project 05: Node.js Express

