Software Engineering Immersive

GENERAL ASSEMBLY

Overview

General Assembly's Software Engineering Immersive (SEI) is a transformative course that prepares students to break into tech careers.

Designed to get you hired, this software engineering bootcamp features best-in-class instruction, career coaching, and professional connections to top employers. Join us on a part- or full-time schedule, either on campus or online in our Remote classroom.

As a graduate, you'll leave with a solid base of fundamental programming and computer science knowledge, as well as experience with languages, frameworks, and libraries employers demand.

Throughout this expert-designed program, you'll:

- Explore programming and computer science fundamentals, as well as software engineering best practices.
- Create a front-end web application with modern JavaScript frameworks such as Angular or React.
- Develop and deploy full-stack applications with in-demand technologies such as Ruby on Rails, Python with Django, and Express with Node.js.
- Build secure full-stack applications by leveraging common design and architectural patterns like model–view–controller (MVC) and Representational State Transfer (REST).
- Practice version control and collaborative software development with Git and GitHub.
- Safely model and store data in SQL and NoSQL databases.
- Consume and integrate third-party application programming interfaces (APIs) in an application.
- Prepare for the world of work, compiling a professional-grade portfolio of solo and group projects.

Prerequisites

This is a beginner-friendly program with no prerequisites, although many students have engaged in self-learning previously or have worked at tech startups or in tech-adjacent roles. Whether you're new to the field or you're looking to formalize your practice, our curriculum helps you gain fluency in the languages, frameworks, and libraries that modern employers demand and put them to work.

Our Admissions team can discuss your background and learning goals to advise if SEI is a good fit for you.

What to Expect

Pre-Course Learning Paths

Set yourself up for success with up to 14 hours of preparatory lessons covering essential programming concepts in HTML, CSS, and JavaScript. Designed to help you make the most of the course, Software Engineering Fundamentals is a self-paced online learning path you'll complete before day one of class.

The In-Class Experience

Engage in project-based learning that's designed to inspire a lifetime of discovery. As an SEI student, you'll:

- Explore new concepts and tools through expert-led lectures and discussions.
- Complete coding exercises to reinforce newly learned skills.
- Dive deeper into topics and techniques via independent, pair, and group programming labs.
- Receive individualized feedback and support from your expert instructional team.
- Apply what you've learned to homework assignments and unit projects, building out a professional portfolio to show off job-ready skills to potential employers and collaborators.

Dedicated Career Coaching

As an Immersive student, you'll receive dedicated support from career coaches who will help you set goals, make a roadmap for success, and stay on track with your job search. Throughout the course, you'll:

- Get an inside look at the industry through day-in-the-life talks, hiring panel discussions, guest speakers, and more.
- Cultivate a competitive candidate mindset, learning to assess your skill set against job descriptions, track progress, and recognize opportunities.
- Develop your professional brand: Polish your online and in-person presence, and build confidence to set yourself apart in interviews.
- Tap into an exclusive global network of experts, influencers, and peers, plus learn strategies for leveraging your existing connections, in person and online.
- Become an active contributor to the developer community.

After graduation, you'll also gain access to resources to help fuel a lifetime of learning. Dive into new topics or continue honing your software engineering skills with discounts on a suite of tools, passes, and packages to premier events, and more. You can also apply tuition discounts to future GA courses, classes, and workshops, both on campus and online.

What You'll Learn

Pre-Work

Software Engineering Fundamentals

Learn online, and get familiar with fundamental principles and techniques at the core of programming through our self-paced, pre-course learning path.

- Start coding with HTML, CSS, and JavaScript.
- Leverage Git and GitHub to manage work.
- Practice working with a UNIX command line.
- Apply troubleshooting and debugging techniques.

Project: Test your knowledge of key JavaScript concepts, including variables, objects, and functions, building an in-browser game from scratch.

Unit 1

Front-End Development

Discover what it takes to build the web you want to see through hands-on training in the essentials of front-end development. Explore core programming concepts that are applicable in any language, and find out what day-to-day life as a professional engineer is like.

- Get acquainted with common developer tools (e.g., Chrome Developer Tools, text editors, code linters).
- Learn to navigate a computer file structure and configure development environments via a UNIX/Linux command line.
- Solidify your knowledge of how HTML, CSS, and JavaScript are leveraged in software engineering (i.e., web typography, Document Object Model (DOM) manipulation, responsive design).
- Dive into fundamental programming concepts (functions, control flow, variables, scope, etc.) using JavaScript.
- Start using Git and GitHub for version control.
- Learn and implement rigorous debugging strategies.
- Start thinking algorithmically and breaking big problems into smaller parts.
- Gain an introduction to project design, project planning, and project management techniques engineers use on the job, including wireframes, user stories, and Agile development workflows.

Project: Work individually to build a front-end web application that users can see and interact with, leveraging JavaScript, APIs, and more.

Unit 2 Full-Stack Development

Learn to build full-stack web applications, deepening your knowledge of client-facing and server-side development. Expand your repertoire of programming languages and start coding collaboratively. Get familiar with key computer science concepts to become a more efficient programmer and perform confidently in technical interviews.

- Start writing recursive algorithms, as well as algorithms to solve computational problems such as sorting. Analyze algorithmic complexity using Big O Notation.
- Build web forms that collect user data for storage in a database (powered by Structured Query Language (SQL), MongoDB (noSQL), etc.).
- Get acquainted with front-end templating and libraries like Bootstrap.[1]
- Incorporate authentication capabilities into sites and applications (i.e., user logins, encrypted passwords, etc.).
- Gain an introduction to testing and test-driven development.
- Engage in pair programming to understand collaboration and documentation best practices.

Project: Program a password-protected, full-stack application that stores data in a SQL or NoSQL database and deploy it via Heroku.

[1] *Tools taught may vary based on location and market demand.*

Unit 3 Front-End Frameworks

Gain expertise with the modern software engineering tools and frameworks you'll use on the job as a software engineer. Continue to hone your computer science knowledge by further exploring data structures. Get creative with a cumulative final project, building a full-stack application using technology you choose.

- Discover the capabilities that separate software engineers from coders, including the ability to plan, write, test, deploy, and launch a full-stack app using cutting-edge, next-gen technology.
- Deploy robust, modern front-end frameworks (i.e., React, Angular, or Ember) on which powerhouse platforms like Amazon and Facebook are built.
- Incorporate new patterns into front-end architecture, including custom behaviors, client-side models and data binding, form validation, and state management.
- Leverage the package managers and build tools regularly used by professional engineers.

Unit 3 Front-End Frameworks (Cont.)

- Continue to explore data structures and get acquainted with design patterns.
- Prepare for job interviews and engage in mock interviews and additional whiteboarding practice.

Project: Choose the tools and skills you use to build and deploy a full-stack application (students often incorporate JavaScript frameworks — i.e., Angular).

Unit 4 APIs and Full-Stack Development

Hone your programming skills by learning to build full-stack applications that leverage the capabilities of third-party APIs. Through pair programming and group collaboration, you'll gain hands-on experience executing a real-world workflow. Dive deeper into algorithms and data structures.

- Solidify your understanding (and expand your employability) by learning a second tech stack.
- Get acquainted with more back-end libraries, frameworks, and tools that incorporate powerful front-end technologies like AJAX (Asynchronous JavaScript and XML).
- Discover how to integrate third-party APIs into websites and applications (e.g., Stripe).
- Allow user login via token-based authentication and external accounts (i.e., social media, oAuth).
- Organize effective team workflows with Git and GitHub, refining technical and interpersonal collaboration skills.
- Explore advanced debugging, testing, and documentation techniques.
- Learn to use data structures, including linked lists, stacks and queues, sets, and trees.

Final Project: Apply what you've learned throughout the course to mimic a team-client interaction, collaborating to build and deploy a full-stack application that fulfills provided specs. The final result will integrate functionality from a third-party API.

Frequently Asked Questions

Why is this software engineering bootcamp relevant today?

All companies — not just Silicon Valley giants — are evolving into tech companies, and demand is growing steadily for software engineers who can creatively solve problems and implement robust, sustainable solutions. In fact, Harvey Nash and KPMG found that 67% of the tech leaders they surveyed reported an inability to acquire the talent they need. Regardless of your professional background, there's ample opportunity to carve a fulfilling — and future-proof — career path.

Will I earn a certificate?

Yes! Upon passing this course, you will receive a signed certificate of completion. Thousands of GA alumni use their course certificate to demonstrate skills to potential employers — including our 19K+ hiring partners — along with their LinkedIn networks. GA's tech programs are well-regarded by many top employers, who contribute to our curriculum and partner with us to train their own teams.

What are the professional backgrounds of software engineering students?

SEI students come from all walks of life but share one common mission: They are passionate about launching a career in tech by gaining an in-demand, technical skill set. We see career-changers from diverse professional backgrounds, including sales, marketing, project management, finance, and many more. Most are aiming to secure jobs as software engineers or web developers, while others may be looking to combine past experience with a new skill set to enter more specialized roles.

What does my tuition cover?

Here are just some of the benefits Immersive students can expect at GA:

- Expert instruction in the skills you need to enter the workforce as a junior full-stack web developer.
- Self-paced pre-work to explore software engineering fundamentals help you hit the ground running on day one of class.
- Robust coursework, including expert-vetted lesson decks, project toolkits, and more. Refresh and refine your knowledge throughout your professional journey as needed.
- A professional-grade portfolio of projects taken from concept to completion — each mirroring real problems that engineers face — that allows you to showcase the breadth of your technical skills to employers.
- Individual feedback and guidance from instructors and TAs during office hours. Stay motivated and make the most of your experience with the help of GA's dedicated team.
- Dedicated career services to help you navigate your personal job search experience, from technical challenges, to salary negotiation, and more.
- Technical interview prep, including resume reviews, mock interviews, and whiteboarding practice.
- Exclusive access to alumni discounts, networking events, and career workshops.
- A GA course certificate to showcase your new skill set on LinkedIn.

- Connections with a professional network of instructors and peers that lasts well beyond the course. The global GA community can help you navigate and succeed in the field.

What projects will I work on during this course?

For your capstone project, you'll mimic a team-client interaction, collaborating to build and deploy a full-stack application that fulfills provided specs. The final result will integrate functionality from a third-party API.

Throughout this Immersive, you'll also compile a portfolio of solo and group projects designed to reinforce what you've learned in each unit. Gain hands-on experience building and deploying front-end and full-stack applications with a variety of languages and frameworks.

How does this program relate to GA's other coding courses?

Software Engineering Immersive is for learners who are committed to making a career change. Front-End Web Development offers a popular "starter" option for those who are curious about careers in tech or want to work more effectively with technical stakeholders. JavaScript Development offers a further deep dive into the world's most popular programming language.

Which format should I take this course in – on campus or online?

It's up to you! Our Remote courses offer a learning experience that mirrors GA's on-campus offerings but allow you to learn from the comfort of home. If you don't live near a GA campus, have a busy travel schedule, or just want to save yourself the commute, a Remote course could be a good option for you, if available in your market. You'll still get access to the expert instruction, learning resources, and support network that GA is known for.

If you prefer to learn alongside your peers and can make it to campus, our in-person courses allow you to take advantage of our beautiful classrooms and workspaces.

Our Admissions team can advise you on the best format for your personal circumstances and learning style.

What do career services look like for Remote students?

The same as our on-campus experience! We approach our Remote Outcomes programming with the same philosophy, promise to, and expectations of our students. Get an insider's look at the tech industry through virtual sessions like day-in-the-life talks, hiring panel discussions, guest speakers, and more. You'll work individually with your career coach to understand your local job market, find opportunities, and connect with the local tech community.

Our Admissions team can provide more details on the dedicated support you'll receive on the path to landing a software engineering role.

Take the Next Step

Have questions about our Software Engineering Immersive course? Our Admissions team is here to help and can advise on if this program is right for you and your learning goals. You can also:

- Attend an info session online or at your local campus.
- Explore your financing options.
- Apply to enroll in the course.*

**Course modality options vary by location, pending market availability. Please contact our Admissions team to discuss what version is available in your location*