Careers in Code

Capstone Project - Students - Spring 2022 (ARPA) Cohort

Summary

Over the duration of the program, students will create an individual capstone project on something they are passionate about. **The project will be a full-stack (front-end, back-end, database) application that will be built throughout the 24 weeks of the program.** Students talk about problems they are solving, and discuss with instructors and their students about what they are building.

Part of your skillset as a Careers in Code student is being able to manage your time and work in both group and individual settings. In addition to regular classwork and homework, the capstone project is a challenging piece of the program, but one that will be extremely rewarding and you'll be able to proudly display your capstone project.

Our instructors, teaching assistants, and community will assist you throughout the process. All students will present their capstone project on graduation day at the end of the program.

Choosing a project idea

When choosing your project idea, pick something that is exciting to you and that you have a passion for. Think of a problem that might exist today. It can be one you face on a daily basis, here in our community, or a world-wide issue. You should set realistic expectations so that you can accomplish it within 24 weeks. What can you build?

Some important things to consider when choosing your project:
- It's normal to not have a good idea of what skills you'll have to create your project, especially in the beginning of the program. But, that doesn't mean you can't work on something -- think generally about problems you might encounter, and what their solutions might be.
- Be prepared to scale your project up/down depending on your initial idea (more often than not, you will scale it down).
- When you have questions about your capstone project, don't hesitate to ask and run the idea by instructors, teaching assistants, program managers, and your classmates.

MVP (Minimum Viable Product)

Over the duration of the course, you will build an MVP (minimum viable product). **An MVP is a product with just enough features to satisfy early customers (we're using customers loosely, consider your family, friends, classmates, instructors, and the Careers in Code staff your customers).**

Your project should start with a single, simple problem and iterate upon the problem week over week. The Careers in Code team and instructors are happy to help you identify your MVP and give you guidance on what makes the most sense for your capstone project.

You can learn more about what an MVP is here:
- https://medium.freecodecamp.org/what-the-hell-does-minimum-viable-product-actually-mean-anyway-7d8f6a110f38
- http://ask.leanstack.com/lean-startup-fundamentals/what-is-a-minimum-viable-product-mvp

- [What is a Minimum Viable Product (MVP)? (1 minute youtube video)](#)
- [Making sense of MVP (Minimum Viable Product) - 11 minute youtube video](#)

Project Examples (what could I build over 24 weeks)?

Capstone Projects from Cohort 1

Our first group of students built some capstone projects over 24 weeks that they were able to show off to employers on graduation day. You can check out the livestream of their presentations [here](#), as well as our graduate showcase [here](#).

Here's a list of projects that were created at Hack Upstate (in 24 hours!)

- [Hack Upstate XII](#) | [Winning projects](#)
- [Hack Upstate XI](#) | [Winning projects](#)
- [Hack Upstate X](#) | [Winning projects](#)
- [Hack Upstate IX](#) | [Winning projects](#)
- [Hack Upstate VIII](#) | [Winning projects](#)
- [Hack Upstate VII](#) | [Winning projects](#)

Examples of previous projects at coding bootcamps

Here are some projects that other coding bootcamps have done as a capstone project. These are just a few - feel free to do some further digging! If these look intimidating, that's OK. You'll learn how to incorporate class material into your project.

- [Lambda School CS1 Capstone Project Demo - Arc_Hive](#)
- [https://anyonecanlearntocode.com/capstones](#)
- [https://www.hackreactor.com/student-projects](#)
- [https://engineering.columbia.edu/news/coding-boot-camp-capstone](#)
- [https://www.fullstackacademy.com/student-gallery](#)
- [https://wecancodeit.org/code-academy-projects/](#)
- [https://www.switchup.org/blog/fullstack-academy-student-projects](#)
- [https://www.switchup.org/blog/how-coding-bootcamp-projects-prove-your-worth-to-employers](#)
- [https://codeup.com/projects/](#)
- [https://www.quora.com/What-is-a-1-week-long-coding-project-for-a-full-stack-bootcamp-student-in-their-9th-week](#) (scroll down a bit to one of the answers)

What should my tech stack be?

Over the 24 week program, instructors will build out an ecommerce store using the SERN (SQL, Express, React, Node) stack. You can build your capstone with whatever tools and languages you'd like, but we would encourage you to build the capstone using the SERN stack.

Where should I be in my project?

Note: the following proposed schedule will change based on our updated curriculum for our Spring 2022 cohort.

Below you'll find where we think you should be at at the **end of each module** for your capstone project. Whenever a module is completed, you should be trying to incorporate what we've learned in class into your capstone.

We use the following format below and this is how you should be thinking of the capstone week over week:

> **Now that I've completed <u>module `x`</u> I now have <u>`y` skills</u>, and can build or incorporate <u>'z' feature(s)</u> into my capstone project.**

For example:

> **Now that I've completed <u>module 2, Web Development Fundamentals,</u> I now have <u>HTML and CSS</u> skills, and can build <u>a simple 2-3 page website</u>.**

Think about your capstone project in the context of the overall timeline program. For example, as we approach the halfway point (12 weeks completed), you should try to be roughly done with half of your project.

Module 1 (Week 1) The Development Big Picture

Now that I've completed <u>module 1</u>, I now have <u>basic project management skills</u>, and can start to think <u>about the different project ideas</u> for my capstone project.

- Start thinking about project ideas you have. Write them all down somewhere and start to weigh the pros and cons of each.
- Start to plan the high-level features (think user stories and todo lists in Trello) for your capstone project. This should be done using [Trello](), so your instructors and students have easy access to it. You can start on paper, but be ready to migrate your work to Trello.
- Instructors can help you identify the key features of your project and provide feedback.

Module 2 (Weeks 2 - 3) Web Development Fundamentals

Now that I've completed <u>module 2,</u> I now have <u>wireframing,</u> <u>HTML and CSS</u> skills, and can build <u>and deploy a simple 2-3 page website to a static site generator</u>.

Module 3 (Weeks 4 - 5) Visual Design, Accessibility, Responsive Web Design

Now that I've completed <u>module 3,</u> I now have <u>responsive web design</u> skills, and can <u>create a fully responsive website based on a high-fidelity mockup</u>.

Module 4 (Weeks 6 - 7 - 8 - 9) Fundamental Programming and Javascript

Now that I've completed <u>module 4,</u> I now have <u>fundamental javascript</u> skills, and can <u>add basic interactivity to my web pages.</u>

- What functionality will Javascript introduce to your project?

Module 5 (Weeks 10 - 11) HTTP & API's, RestFUl APIs, JSON & Ajax

Now that I've completed <u>module 5,</u> I now have <u>API</u> skills, and can <u>incorporate or create at least one API into my project.</u>

- What API's do you want to use to get Data? DataCuse? TCGplayer? Another API? What about building your own - what will it look like?

Module 6 (Weeks 12 - 13 - 14) React

Now that I've completed <u>module 6,</u> I now have <u>React</u> skills, and can <u>create a react application that utilizes an API in the last module.</u>

Module 7 (Weeks 15 - 16 - 17) Intro to Server-side Javascript with Node.js, Making our own API's

Now that I've completed <u>module 7,</u> I now have <u>Server-side Node.js</u> skills, and can <u>create my own API.</u>

Module 8 (Weeks 18 - 19) Intro to Databases, Data Modeling with SQL

Now that I've completed <u>module 8,</u> I now have <u>SQL database</u> skills, and can <u>create my own database schema and store data that my API can use.</u>

Module 9 (Weeks 20) Testing

Now that I've completed <u>module 9,</u> I now have <u>testing</u> skills, and can <u>write unit tests for my project.</u>

Module 10 (Weeks 21) Infrastructure, Deployment, DevOps

Now that I've completed <u>module 10,</u> I now have <u>deployment</u> skills, and can <u>deploy my web application to a cloud provider.</u>

Module 11 (Weeks 22) Intro to Cryptography, Authentication and Authorization

Now that I've completed <u>module 11,</u> I now have <u>authentication and authorization</u> skills, and can <u>implement a login system.</u>

Module 12 (Week 23) Cybersecurity fundamentals and web security

Now that I've completed <u>module 12,</u> I now have <u>cybersecurity</u> skills, and can <u>implement basic security protocols for my project.</u>

Module 13 (Week 24) Capstone Work & Presentations

Now that I've completed <u>module 13,</u> I now have <u>a capstone project I've built over 24 weeks</u>, and will present it <u>during capstone presentations.</u>

Deliverables (what do I need to do to stay on track?)

Capstone Intake Data (one-time submission)

Once you have a project idea, you'll need to submit a one time form for information on your project name, an explanation of your project, and your proposed solutions to the problems you identify. If your project idea changes, please submit this again.

[You can view the google form submission you'll need to complete once here.](#)

Capstone Update (weekly)

Each week, students will submit a status report of your capstone project. This will help you stay on track and help us get a sense of where everyone is at.

The form will consist of a few questions:
- What have you done since your last update?
- What are you currently working on?
- What's coming up next for your project?
- What are the major problems, roadblocks, or challenges you're having?
- What is your biggest takeaway or lesson learned?

[View the google form submission you'll need to complete every week here.](#)

Touchpoint / Demo Days (bi-weekly)

We will set up 30 minutes every 2 weeks at the beginning of class for a status update with the students on their capstone projects. The program manager or instructor will go around the room and ask each student for an update on their capstone project.

Each student will share their ideas, status updates, thoughts, questions, concerns, problems solved, lessons learned, and share their screen via Zoom for a demo of your progress thus far. This can be features of your project via Trello, code, wireframes or mockups, web pages, etc. This will prepare you for your final capstone presentation.

Each student should talk for 2 minutes and ultimately aim to answer these five questions:
- What have you done since your last update?
- What are you currently working on?
- What's coming up next for your project?
- What are the major problems, roadblocks, or challenges you're having?
- What is your biggest takeaway or lesson learned?

Schedule

Note: dates are TBD for the Spring 2022 cohort.

[Optional] Technical Blog Posts

Technical blog posts are a way to show prospective employers that you can communicate about your code and complex topics.

These blog posts are not required. However, we strongly encourage you to write as many as you can throughout the program as they'll help keep you on track for your project and you'll be building an impressive portfolio. We recommend 8 blog posts written after the 24 week program. For your blogs, you can use your demo days as the content. Medium is a great place to host your blog, or you can create a blog on your website.

Final Presentation

Students will participate in a final capstone presentation (~8-10 minutes) where they will present their capstone project to the Careers in Code staff, students, instructors, and partners of the program. This will occur on graduation day right before you receive your official Careers and Code Diploma.

You can check out the livestream of their presentations here, as well as our graduate showcase here.

Resources / Inspiration / Tips & Tricks

Feedback

- [Jesse] "fake it take you make it", or "believe it until you achieve it".
  - [Jesse] You can mock the entire user experience with HTML, CSS, and a bit of Javascript. Here's a simple project I made with Bootstrap https://jessepeplinski.github.io/hardware-lender-web-app/roles/
  - Think of the end goal of your project. What is the user experience? Create a wireframe / mockup, then code to that experience.

Agile / Scrum / Trello

- Hack Upstate Software Development Agile Template
- [Video] What is agile?
- [Reading] https://www.agilelearninglabs.com/resources/scrum-introduction/

- [Video] [Scrum in 5 minutes](#)
- [Video] [Scrum in 7 minutes](#)
- [Video] [How to use Trello](#)
- [Video] [How to create user stories](#)
- [Video] [Agile workflows in Trello](#)

Managing Side Projects

- [Reading] [Here is a great multi part series by Mubs, who we will (hopefully) be having as a guest speaker in the coming weeks on his creative process!](#) There are 13 parts.
- [Reading] [How to manage side projects beside your full-time job](#)
- [Reading] [The 4 Secrets to Successful Side Projects](#)
- [Reading] [4 Steps for Managing a Side Project When You're Already Busy](#)

Questions & Feedback

We'd encourage you to share your ideas amongst instructors, local employers, and program coordinators. They'd be happy to help out w/ ideas and guidance. If you have any questions or feedback on anything about the capstone project - don't hesitate to reach out to us.