# THE CODING BOOT CAMP

# FULL STACK FLEX PROGRAM

## CURRICULUM OVERVIEW – FULL TIME

The digital revolution has transformed virtually every area of human activity—and you can be part of it as a web development professional. **University of Denver Coding Boot Camp** is a 12-week Full Stack Flex course that gives you the knowledge and skills to build dynamic end-to-end web applications and become a full stack web developer.

The program is rigorous and fast-paced and covers both the theory and application of web development. As you gain proficiency, you'll use what you learn on real projects under the guidance of area employers. Plus, you'll have an impressive Professional Portfolio and the confidence to succeed as a web development professional.

Are you creative, curious and looking to reinvent yourself professionally? If so—or if any of the following describes your situation—enrolling in our coding boot camp could be a smart career move:

» You're considering a career change but not sure how to take the first step.

» You're happy in your current field, but want to move to another company—or stay put but shift from a non-technical into a technical position.

» You want to engage more deeply with your current job—or boost your earnings and broaden your experience with freelance work.

» You have an entrepreneurial idea and need to acquire the skills to go "all in" on it and launch your business.

» You're looking to learn a lot of useful and valuable skills in a short amount of time.

## THE SKILLS YOU'LL GAIN

You will graduate with full stack web development skills*, including:

### Browser Based Technologies

» HTML

» CSS

» Responsive Design

» CSS Frameworks (Bootstrap, Materialize)

» JavaScript

» jQuery

» Handlebars

» Cookies, Local Storage

» React.js

### Deployment

» Heroku

» Git

» Github Pages

### PHP

» Laravel

### Databases

» Firebase

» MySQL

» MongoDB

### Node.js (Server Side Development)

» Express

» Security and Session Storage

» User Authentication

» MERN Stack
(MongoDB, Express.js, React.js, Node.js)

### Quality Assurance

» Writing Tests

### Computer Science

» Design Patterns

» Algorithms

*The material covered in this course is subject to change due to market demand.

# BUILDING ON THE BASICS

In web development as in sports, you can't succeed without a solid grounding in the fundamentals. That's why our curriculum begins with a deep dive into the basics of coding and data structure. That said, we recognize that the surest way to impress prospective employers and get job offers is to demonstrate your skills on real-world projects. You'll have ample opportunity for hands-on involvement in outside projects, which will make up your Professional Portfolio.

## REAL PROJECTS, REAL JOBS

Our graduates will have the opportunity to be placed in many different roles, including:

» Full Stack Developer

» Frontend Web Developer

» Backend Web Developer

» Product Manager

» Technical Project Manager

» QA and Test Engineer

» Software Developer

» Application Development Manager

» Computer Programmer

» Web Designer

» Email Developer

» Web Producer

» Technical Business Analyst

## WHAT YOU WILL LEARN

By the time you graduate, you can expect to be able to:

» Apply "social coding" accepted and best practices (including source control, issue tracking, functional feedback, etc.)

» Build a frontend website either from scratch or by utilizing a frontend framework (such as Bootstrap)

» Deploy static and dynamic websites to the cloud

» Implement complex logical conditions to meet an objective

» Write SQL commands to perform Create, Read, Update and Delete commands

» Create a full stack Single Page Application with AJAX communication

» Develop your vision for a website -- and then build it!

» Expertly navigate the file system and terminal basics

» Work independently or in a group on complex projects throughout the entire development lifecycle

» Understand the basics of troubleshooting and enhancing legacy code

» Communicate the basics of serving a webpage and how the browser renders code

» Create RESTful API's utilizing JSON as a data format

» Consume RESTful API's properly utilizing REST verbs

» Create robust PHP-based websites utilizing Laravel, a MVC framework

» Create session-based applications utilizing user authentication schemes that are well-known and widely used

# COURSE STRUCTURE

Over the course of 12 weeks, you'll attend informative lectures and take part in a variety of individual and team exercises, working independently and in groups, in the classroom and at home. Homework assignments provide an opportunity to apply what you've learned and build on it. The goal is to give you a comprehensive learning experience so we model our program after real world corporate environments. This gives students true insight into a "day in the life" of a full stack developer.

### Discussion

Instructor-led discussions cover the background, history and use of a new technology or concept.

### Lab Work

You'll put classroom teaching into practice individually and with a team to work on timed in-class exercises and projects.

### Portfolio Projects

Your portfolio signals to employers that you are ready for primetime! You'll build a substantial portfolio of projects that demonstrate your abilities across a wide variety of technologies.

## WE'RE HERE TO HELP

As you move up the learning curve, you're likely to have questions around some of the concepts covered in class. We're here to help—through in-person and virtual office hours, as well as a dedicated #slack channel where you can get assistance from instructors, support staff and your fellow students. All work is done via Github, so you can create issues directly on your own projects for instructors to assist you in a truly asynchronous fashion. In addition to learning to code, you will have access to career services that will help you prepare for technical roles after graduation such as:

» Career Services

» Access to prospective employers

» Career Content and Practice Sessions

» Projects Supported by Hiring Partners

» Customizable tools and templates

» Panel Speaker Event

» Career Coaching

» High Impact Career Events

» Soft Skills Training

» Personal Job Matching

» Frequent program enhancements driven by employer partners

It's a fact: companies care about what you can do, not what you say you can do. For that reason, our curriculum teaches you how to put what you've learned to work on actual portfolio projects, ranging from simple HTML and CSS code samples to sophisticated Single Page Applications with backend databases.

## YOUR FULL STACK PORTFOLIO PAGE

Once you complete our program, your portfolio page will help you showcase your work with links and descriptions to the projects you've created, code samples, and personal information that employers want to see. Think of your portfolio page as your new home on the web.

**Skills Needed:**

- HTML5
- CSS
- JavaScript
- Bootstrap
- Heroku
- Git

**Objectives:**

- Create a home on the web to showcase your skills
- Build a complete site from concept
- Commit code to a shared repository

## JAVASCRIPT BASED GAME

Building a game has many components, and seemingly simple ones such as keeping track of state or playing over the Internet, can be deceptively complex. This game involves components like interface design, state management, edge cases, determining win paths...and, of course, fun! Students also learn intangible skills, such as how to best tackle a difficult problem.

**Skills Needed:**

- HTML5/CSS
- JavaScript/jQuery
- Event and State Management
- Bootstrap

**Objectives:**

- Build a fully functional game
- Track winning and losing stats
- Apply logic skills to a real project
- Understand the basics of iteration

## SELF-SELECTED FRONT END PROJECT

This is a group project that forces you to think outside your comfort zone. You and your group will decide what to build and then build it—a frontend application that interacts with real-world services like Google Maps, Twitter and IMDb API.

**Skills Needed:**

- HTML5/CSS
- JavaScript/jQuery
- API Consumption
- Bootstrap
- Git
- Heroku

**Objectives:**

- Work in a group to build a project together
- Interact with third-party services
- Think in terms of mobile responsive design
- Read/write from/to a remote database

## MONGODB WEB SCRAPER

Create a website that dynamically aggregates articles from your favorite news outlet while letting your users leave comments on each story. You'll save and retrieve these articles and comments by using the Mongoose ORM to query a remote MongoDB database.

**Skills Needed:**

- HTML5/CSS
- Interactivity (AJAX)
- JavaScript/jQuery
- Bootstrap
- Node.js
- Express.js
- MongoDB
- Mongoose ORM
- Cheerio

**Objectives:**

- Combine your knowledge of back-end and frontend technologies to build a full stack application.
- Read/write from/to a remote database
- Constantly update your collection of articles with a script that scrapes the latest stories whenever someone visits your site.

## FULL STACK PROJECT

In your first full stack web application you'll create an intuitive frontend/robust backend and scalable database.

**Skills Needed:**

- HTML5/CSS
- JavaScript/jQuery
- State Management
- Sessions
- Bootstrap
- Interactivity (AJAX)
- mySQL
- Node.js
- Express.js
- ORM

**Objectives:**

- Track issue progress with industry standard tools
- Communicate with team members asynchronously
- Design a MySQL Database Schema
- Create a full stack application
- Write project documentation
- Understand database relationships

## REACTJS SITE

Facebook's ReactJS library allows developers to combine the layout and logic of HTML and JavaScript into a cleaner and more cohesive approach to coding. It's abounding complexities and strict demands make the learning curve steep, but grasping the React paradigm will help you keep your code maintainable while at the same time impressing potential employers.

**Skills Needed:**

- ReactJS
- React Router
- JSX
- Babel
- HTML/CSS
- Bootstrap
- MongoDB
- Git

**Objectives:**

- Building an app powered by the MERN stack: MongoDB, Express, ReactJS and Node
- Creating data-rich React components that you can mix and match throughout your app's pages.
- Incorporating pre-programmed Node packages from the NPM community
- Understand database relationships

## LARAVEL SITE

Laravel is huge. It has become the most powerful and most heavily used PHP Framework in the world. This is cutting edge in the PHP world, and you'll be sure to impress employers with what you make with it.

**Skills Needed:**

» HTML5/CSS

» Bootstrap

» Git

» PHP

» Laravel

» MySQL

» React.js

**Objectives:**

» Customizing it based on your group's needs

» Use pagination

» Use open source packages to do a lot in very little time

» Leverage the MVC design pattern with Laravel

» Implement authentication to let users sign into your application

## FINAL PROJECT

You will work independently or break out into groups to collaborate on a final project. You will come up with your own project and actually build it. The skills you learn during this project will truly help you to prepare for your first interviews and jobs!

**Skills Needed:**

» Everything you've learned!

**Objectives:**

» Define project scope

» Quality Assurance testing

» Responsive Design

» Deployment

» Code Organization

| MODULE | DESCRIPTION | WHAT YOU'LL LEARN |
|---|---|---|
| **Module 1: Mastering The Browser** (Weeks 1-2) | When most people think of the "Internet," their mind immediately conjures up their web browser. We dive into detail about how the browser works and what exactly the source code comprising a web page does. | » Creating a webpage from scratch<br>» Mastering terminal commands<br>» JavaScript and it's most beloved child, jQuery |
| **Module 2: API and JSON** (Weeks 3-4) | The advent of the API has rapidly propelled the pace of innovation in technology. Being able to communicate with other systems enables you to do even more with yours. | » Consuming RESTful APIs<br>» Parsing JSON to extract meaningful data<br>» Using AJAX to update data on a website without having to hit that "refresh" button in the browser |
| **Module 3: Server Side** (Weeks 5-7) | Have you ever wondered how websites originate? They typically come from computer programs called "servers," but did you know that servers do so much more? Interacting with databases and even other servers! Learn how to write back-end JavaScript code with Node.js. | » Writing Node.js server code to serve static web pages<br>» Querying large amounts of data and answering questions from MySQL and MongoDB Databases<br>» Incorporating the Express framework to combine these server-side technologies with client-facing web pages—the full stack begins here |
| **Module 4: MERN and Mobile** (Week 10) | After studying the front and back ends, you'll be ready to tackle different approaches for building full stack applications. In this module, we'll teach you how to create complex web applications and cross-platform mobile apps with Facebook's React technologies. | » Grasping the intricacies of building data-bound user interfaces with the ReactJS library<br>» Applying this knowledge with your experience with Node, MongoDB and Express to create REMN applications<br>» Building on your React expertise by using a similar coding style to develop iOS and Android apps |
| **Module 5: PHP** (Weeks 10) | PHP started out as a simple language for a personal homepage. It's now a critical part of the Internet as a whole. Here's where we dive in to teach you how it all comes together. | » Deep-dive into Laravel<br>» Use Laravel's built-in tools to build complex applications quickly<br>» Understand how Laravel implements the MVC design pattern |

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| MODULE | DESCRIPTION | WHAT YOU'LL LEARN |
|---|---|---|
| **Module 6: Final Project** (Weeks 11) | Computer science fundamentals are essential to web development so our curriculum includes a deep dive into the basics of coding and algorithms. | » Applying computer science to JavaScript<br>» Studying which design patterns to use for specific problems<br>» Understanding which searching and sorting algorithms are most efficient for particular use cases |
| **Module 7: Final Project** (Weeks 12) | Throughout the course, you've developed an impressive portfolio of projects to show future employers. This final project is all yours. Use all of the technologies you've learned and make something distinctly your own. | » Dreaming up something fantastic and understanding the bounds of reasonable and achievable |