Code Nation

Master Coding Curriculum

Our Master bootcamps are designed to give people the skills they need to become amazing Junior Developers in just 12 weeks, providing the digital sector with its next generation of business-ready talent.

Our approach

Everything is core

There's a temptation to focus exclusively on the technology in our kind of learning environment. We think it goes without saying that technical skills are a fundamental part of what our students learn; we teach modern technologies that can help make a difference to modern businesses immediately.

The thing is, we know that Junior Developers need to make meaningful contributions and the quicker they can do that, the better.

To that end, our bootcamps are entirely immersive and project led- so we create new talent that is commercial aware, technically mature and exposed to industry practice from day one.

We are, and always will be, led by business.

Our core curriculum

Summary

Our curriculum needs evolve as the sector evolves. Junior developer skillsets, from a technical perspective, need to evolve too.

Technical highlights :

- Coding principles using JavaScript, the most popular language in the world (most of the time)
- iPhone app development with Swift
- HTML and CSS
- Problem-solving
- React and Vue.js
- Node.js
- MongoDB
- Principles of object-oriented programming
- Test-driven development
- Project-based and challenge-based learning approach
- Final project set by pledging businesses

Commercial skills highlights :

- Working in an agile environment
- Kanban
- Understanding the lifecycle of a technical project
- Development/technical responsibilities to project managers and client services
- How to work with project managers and testers
- How to approach problem solving in tech

Personal skills highlights :

- Encouraging mindfulness and self-awareness
- Working in a team and understanding where junior developers fit in a typical structure
- Presentation skills; internal and external lightning talks via meetups
- Taking part in tech stand ups
- Yoga

Career training highlights :

- 1-1 training with our partners, associates and internal experts to help get students business-ready and prepared for work

The Code Nation curriculum has been shaped by businesses.

Businesses throughout our Pledger network told us what they want to see, so we have developed our bootcamps around it to help produce the next-generation of talent that the sector demands.

We know how important it is that Juniors advance as quickly as possible and contribute to projects, because ultimately they're the Mid-Weights and Seniors of the future.

Our key study areas are innovative and close to our hearts. You can take a deep dive into the details in the next pages.

The Code Nation standard.

We have split our programme up into 3 distinct sections. This means our junior developers receive a carefully curated and relevant experience throughout their time at Code Nation.

This approach means our students get the kind of learning experience they need, when they need it.

The 3 phases

Deep learning phase	Weeks 1 & 2
Immersive phase	Weeks 3 - 10
Commercial phase	Weeks 11 & 12

Deep learning phase

First lines of code

Welcome to where it all begins. The deep learning phase makes up weeks 1 & 2 of the Master: Coding bootcamp.

It's possible that our junior developers are writing their first lines of code in these two weeks and we are laser-focused on helping them learn the core technical tools they're going to need to become successful professional developers.

The focus is purely on learning how to think like a developer, working with the mechanics of JavaScript and solving problems using code.

It's a pure expression of coding and learning.

Immersive phase

Owning the role

This is where things ramp up. Code Nation's mission is to create a seamless drag & drop learning experience, meaning our junior developers are being prepared for life as professionals throughout their programme.

When they start employment, they will be prepared for life in the industry because Code Nation's Immersive phase runs exactly like a professional technical team does.

In week 3, our students begin working with commercial practices and continue to every day.

Their days begin with a stand-up, tasks are managed using tickets and whatever is assigned is what they will work on. At the end of the day, they're required to submit timesheets to account for what they've been working on and for how long.

Communication is key and their instructors act as Practice Directors, making sure everything is being driven as required, that git commits are present and correct and that best practice is being followed.

This continues right through to the end of the programme. By the end of the course, they're ready to be dropped into a professional technical team because they've been working like one anyway.

Commercial phase

Delivering a project

Weeks 11 & 12 bring everything together to deliver a commercial-style project set by pledgers.

This is a full-service phase that sees our junior developers work on key stages of technical delivery; discovering requirements, technical planning, creating tasks and tickets, taking part in stand-ups, applying best practice with collaboration tools like git and Slack, writing modular code using TDD principles and ultimately delivering the solution.

Probably with a cup of coffee for good measure.

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Weeks 1 & 2

The Fundamentals of Coding and JavaScript

Weeks 1 & 2 cover the key technical mechanics needed to make things happen. From variables through to prototypical inheritance, these are our deep learning weeks; learning the tools needed to kickstart a career in development.

Key areas at a glance:

- Introduction to core principles like variables, arrays, functions, loops and other key tools
- Understanding classes and objects
- Exploring how JavaScript works under the hood with prototypes
- Understanding the JavaScript call stack
- Working with scope and the this keyword
- Solving problems using JavaScript
- Understanding the concepts of object-oriented programming

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Weeks 3-5

Front-end Web Development

Weeks 3, 4 & 5 level things up. Moving into our Immersive phase, our Junior Developers will be introduced to professional tools, techniques and workflows to help them truly become pro-devs. The technical focus for these 3 weeks is front-end development with HTML, CSS/SCSS, JavaScript and React.

Key areas at a glance:

- Introduction to ticket and task management using agile principles
- Managing time with timesheets
- Taking part in stand-ups
- Working with HTML and CSS to create webpages
- Implementing JavaScript in the browser to bring interactivity to webpages
- Mobile-first, responsive development
- Using React to create next-generation web applications

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Weeks 6-8

Back-end Web Development

Weeks 6, 7 & 8 introduces our Junior Developers to serious back-end development with Node.js and associated technologies like Express. Databases are covered with both relational and document-based technologies with MySQL and Mongodb. We also take the opportunity to build on the front-end skills from Weeks 3-5 by creating a full-stack web application.

Key areas at a glance:

- Introduction to Node.js
- Using Asynchronous JavaScript with Async/Await
- Understanding routing
- Using middleware like Express to create scalable web apps
- Using MySQL to create relational databases and Mongodb to create NoSQL systems
- Working with APIs
- Full test-driven development implementation with Jest

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Weeks 9 & 10

Mobile app development

Week 9 introduces our Junior Developers to a new tech stack and technology; Swift and iPhone development. We do this to provide our students with the experience of learning a new stack from scratch with our support and to develop a mobile development mindset. In Week 10, we knuckle down with Progressive Web App development with React Native.

Key areas at a glance:

- Introduction to Swift
- Introduction to Xcode and the iOS SDK
- Understanding how to work with a fully object-oriented language
- Implementing specific sophisticated features of iOS including the Core suite of tools including Core Location, Core Data and others to create professional, polished apps
- Using React Native to create Progressive Web Apps
- Understanding the future of mobile development

Weeks 11 & 12

Commercial project

Weeks 11 & 12 bring everything together. Signalling the start of our Commercial phase, our Junior Developers get the opportunity to work on a brief set by our pledgers (or their employers if they're apprentices) to professional standards.

Key areas at a glance:

- **Opportunity to work in a professional workflow**
- **Employers of apprentices able to tailor their apprentices' learning experience by setting a project in their tech stack**
- **Self-funded students receive the chance to work on a brief set by pledgers who may be looking to hire**

This is more than a technical education.

This is next-generation education.

We don't mess about with personal and commercial skills - we're serious about them. And we make them a core part of the curriculum alongside learning the tech.

Going as molecular as setting up weekly yoga classes, mindfulness and resilience workshops and personal development sessions... through to Doom deathmatches and even quiz nights.

We put teamwork and Agile working at the core of everything we do. Even in deathmatch, they work in teams. True story.

We make sure to support our Apprentices throughout their entire 15-month programme.

Once they've completed their 3-month bootcamp with us, they will be assigned a Skills Coach that will support them for the remaining 12 months.

Their Skills Coach will visit them on-site every month to ensure the Apprentices are progressing and receiving the support they need, as well as running 3 workshops across the programme.

In addition, your Apprentices will receive a tailored learning plan and a Pluralsight subscription so they can get new skills on-demand, as well as a curated learning experience implemented by their Skills Coach.

End-to-end, your apprentices receive the support they need to become technical professionals.

Workshop 1

Professional Developer Principles

Workshop overview

This workshop covers several core principles of what it takes to be a professional software developer, ranging from understanding the software development lifecycle and understanding the difference between agile and waterfall development through to how to respond to business needs.

This workshop takes place in month 5.

Learning Objectives

In this session, our developers will cover :

- How to operate at all stages of the software development lifecycle
- Understanding the business environment and issues related to software development
- How to operate at maximum effectiveness in their own businesses, how to work in their customers' environments and the wider industry
- The difference between agile and waterfall methodologies

Workshop 2

Standard practice and testing frameworks

Workshop overview

This workshop covers both the importance of coding standards both industry-wide and within their own businesses as well as interpreting and following testing frameworks and methodologies.

This workshop takes place in month 7.

Learning Objectives

In this session, our developers will cover :

- Interpreting and following company-defined coding standards and understanding what good practice typically looks like in a modern development environment
- Understanding testing frameworks and methodologies and how to work with them to produce professional, quality products

Workshop 3

Levelling-up and contributing to how projects get made

Workshop overview

This workshop covers both how to create analysis artefacts like use cases and user stories as well as how to interpret and follow software designs and functional/technical specifications

This workshop takes place in month 9.

Learning Objectives

In this session, our developers will cover :

- Understanding the place of use cases and user stories in software development and how to create them
- Interpreting and following software designs through to development and understanding how to work with and create technical specifications

Apprentice students will sit a **Microsoft exam** at the end of the bootcamp to give them an opportunity to get **certified** and show off what they know.

The curriculum is geared around getting your new developers **business-ready** and giving them a **laser-focused** deadline for the exam helps with that.

Students will sit **Microsoft Exam 70-480: Programming with HTML5, with JavaScript and CSS3**

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We deliver the final 15%* of the Apprenticeship standard through our **continuous learning workshops** covering the rigour needed to be a professional Developer or Cyber Technologist.

*Don't worry, that doesn't include the BBQs, bowling, games nights etc. They're all extra.

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