AFTER-HOURS C# .NET BOOTCAMP

DETAILED COURSE OVERVIEW AND SYLLABUS
OVERVIEW

The after-hours C# .NET bootcamp at Grand Circus is designed to transform you from coding novice to programming powerhouse in twenty-six weeks of intensive technical and career readiness training. .NET Core is a programming framework used in enterprise development around the world that’s heavily integrated with the C# language. This programming language is highly in demand throughout Michigan and beyond. This programming bootcamp will introduce you to the fundamentals of enterprise development (.NET), the use of Visual Studio, SQL databases, and how to design and deploy object-oriented applications. All along the way and after bootcamp, get the tried and tested training and support you need for a successful job search.

WHAT YOU’LL LEARN

• Manipulating data in console applications
• C# Fundamentals, OOP, HTML/CSS, SQL and learn how to use those concepts within Web Applications
• Computer Science foundations including Algorithms, Data Structures and Design Patterns
• Collaborative software development and version control with Git and GitHub
• Software development and programming best practices that separate great developers from the rest
• Best practices for deploying applications to Microsoft Azure
• Consuming and integrating third-party application programming interfaces (APIs) in an application
• How to make an API
• Agile application development

WHAT TO EXPECT IN CLASS

• 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 mid-term projects and demo day, building out a professional portfolio to show off job-ready skills
NAVIGATING YOUR NEW CAREER PATH

As a Grand Circus after-hours bootcamp student, you’ll receive personalized support from our team of career coaches and program managers designed to support your future career ambitions, not only for your first job after bootcamp but for your long-term career in tech (or wherever your new skills will take you!). Navigating a new industry can be difficult; our career services team has crafted a learning approach that teaches students how to identify goals, research their options and find their competitive edge. This collaborative relationship between students and staff takes hustle and hard work. Our proven process works when students work with the process.

THROUGHOUT BOOTCAMP YOU WILL:

- Learn skills to combat impostor syndrome, something many developers struggle with. We’ll help you identify signs of self-doubt, ways to overcome them, and guide you through constructive ways to give and receive feedback.
- Understand and prepare for the career search process in your new industry.
- Determine career goals and keep them motivated in successfully finding their dream job.
- Our team works directly with students to identify and fulfill “must-haves” for their in-person and digital presence. Even the smallest details matter and we support each student as they work toward having a polished approach to the career search.
- Practice behavioral and technical interviews with upfront training, tips, and mock interviews to improve your interviewing confidence.
- Hear from guest speakers and participate in workshops designed to prepare you for your new career.
- Learn to assess your skills objectively against job descriptions.
- Build your unique professional brand.
- Show off your new skills and connect with employers at Demo Day.
- Get connected to the tech community through hosted meetups and community events.
UNIT ONE: GETTING STARTED

Start getting your tools together to get ready for bootcamp. Learn where you will write code at Grand Circus (Visual Studio) and how to share that code to GitHub. Finish off this unit with two deliverables using the basic C# tools you have learned.

This unit provides the foundation of web programming that will be built on in the following units. Get weekly one-on-one coaching with a GC grad by appointment.

Finish off the unit with two deliverables using the C# tools you learned.

• The C#.NET Ecosystem
• Using Visual Studio as your Integrated Development Environment
• Fundamentals of Version Control (Git/GitHub)
• Data Types & Basic Syntax
• Operators, Expressions, and Statements

UNIT TWO: ELEMENTS OF C#

Welcome to bootcamp! Here, you will continue filling your C# toolbox! You will learn additional ways to manipulate data in console applications. In the classroom setting, you will have lectures interspersed with collaboration with classmates.

• Control Statements: Conditionals and Loops
• String Manipulation
• Regular Expressions
• Methods
• Arrays, Collections and Generics
• Pair Programming
• Coding best practices
• Debugging
• Exceptions and error handling
• Documentation
• Version Control: Branching and Merging
UNIT THREE: OBJECT-ORIENTED PROGRAMMING

Once we’ve got your toolbox filled with C# fundamentals, you’ll move along to Object Oriented Programming, a foundation of C#. You will now be able to create your own customized objects in a midterm group project!

- Introduction to OOP
- Classes and Objects
- Inheritance and Polymorphism
- Interfaces and abstract classes
- Mid-Term Project

UNIT FOUR: ADVANCED C# CONCEPTS

Now that you’ve learned the basics, we’ll touch on some more advanced topics. Getting a base knowledge of these tools will help when we go from console applications to web applications.

- File I/O
- Threads
- Test-Driven Development

UNIT FIVE: COMPUTER SCIENCE TOPICS

By now you might have noticed some patterns in the code we write. This unit allows a little deeper dive into these patterns in order to recognize them and use them within the code.

- Algorithms
- Data Structures
- Design Patterns

UNIT SIX: CORE FRONT-END SKILLS

Our first foray into web development! Here, you will learn some front-end basics that you will use when creating.

- HTML
- CSS
- JavaScript
UNIT SEVEN: DATABASES

A large part of programming in .NET is manipulating and storing data. SQL allows us to do that in a big way. This unit will prepare you for Web Development by teaching you the basics of storing and accessing data within SQL Server.

- Relational Databases
- SQL
- Microsoft SQL Server

UNIT EIGHT: ASP.NET MVC

You’ve now reached the unit on Web Development! Here, you will enter into the world of creating .NET Web Applications. You will take everything you have learned from C# Fundamentals, to OOP, to HTML/CSS, to SQL and learn how to use those concepts within Web Applications.

- ASP.NET
- ASP.NET Core Web App with Models, Views, and Controllers
- NuGet Package Manager
- Using Databases with Entity Framework (EF Core) & LINQ
- Lambda Expressions

UNIT NINE: ADVANCED WEB TOPICS

This is the final step before Final Projects! You’re almost there! You will learn how to use external data sources via Web APIs and how to deploy a web application and database to Microsoft Azure. You will learn the basics of working on a team in the Agile method.

- Agile Project Methodologies
- Consuming and Creating Web APIs
- JSON & XML
- AJAX
- Microsoft Azure and cloud deployment
UNIT TEN: **FINAL PROJECTS**

Following an agile software development process, students work in groups to complete web application projects of their choice. Each team first creates a minimally-viable product to fulfill mandatory technical elements, then iterates based on feedback, refining and adding additional features. At the end of the bootcamp, teams present their projects to family and friends at Graduation Night and then employers at Demo Day!

The final project gives students extensive practice in:

- Following an agile process
- Collaborating on a software development team
- Receiving and acting on feedback
- Reviewing and documenting code
- Maintaining and building a codebase through good Version Control processes
- Putting the technologies they’ve learned in bootcamp into practice by creating a full-fledged web application

**CAREER READINESS**

Students build their career and soft skills in sessions throughout the bootcamp:

- Impostor Syndrome + Giving & Receiving Feedback Workshop
- Career Inspiration & Exploration
- Employable You (LinkedIn Workshop)
- Communicating for Success
- Interview Prep
- Distinct Value Add
- Mock Behavioral & Technical Interviews