PROPEL LEARN

IN COLLABORATION

Socially Just Coding: Develop in Swift Explorations Pt. 1

Socially Just Coding is part 1 of a two part series in Develop in Swift Explorations. This eight-week course introduces students to core programming concepts through hands-on activities, Xcode playgrounds, and app projects. You'll build your app development skills as you go, learning about app design as well as programming in Xcode. You'll also have opportunities to think about the impact of computing innovations, and the decisions you make about your actions online and as an app developer. Between units, you'll explore a story about a group of students in a TV club. As you follow these episodes, you'll have a chance to think about different aspects of online engagement, how information is shared online, and what kinds of decisions need to be made in a connected world.

This course teaches the foundations of coding and leverages Coding with Swift, Apple's, seamless, straightforward program language providing learners with an engaging way to learn the coding language of the future while embarking on the journey of self discovery. In this course, students are not only given an opportunity to learn, but learn something that can change your life and the world. Students learn key computing concepts, building a solid foundation in programming with Swift. They'll learn about how to directly address social problems while being taught the methods of coding and app development. Further, students will learn the impact of computing and apps on themselves, society, economies, and cultures while exploring iOS app development. ***Upon completion of this course, you will earn a badge in Swift Explorations Pt. 1***

COURSE OBJECTIVES

By the end of this course, you will have built several simple apps and prototyped an app of your own design. Along the way, you'll have gotten a taste for the world of app development—gaining an appreciation for how technology works, how you can use it to express yourself, and how it can be used to solve problems. In this course we will specifically:

➤ Explore the impact of coding on social justice

➤ Learning technology, theory, and Swift coding language

➤ Understand how to use Swift coding language

➤ Practice designing and building applications

MODULE 1: Coding in Society

In this 1 week module, we will begin by examining personal identity and how coding can be used to promote diversity and inclusion. We will discuss how coding can be used as a tool to create solutions for social issues, and how these solutions can have a significant impact on society. We'll also talk about the many career paths available to those with coding skills. From software development to user experience design, the opportunities are endless. Lastly, we will discuss how proficiency in coding can enhance employability and provide opportunities for advancement.

MODULE 2: Programming Fundamentals

In this 2 week module, you will learn Programming Fundamentals. Programming is the process of giving a computer instructions to execute. It involves providing inputs to a computer, which are then processed and manipulated, and finally, outputs are generated. Programming is all about inputs and outputs, and it's a critical skill that has become increasingly important in our digital age.

MODULE 3: Build and Design with Swift

In this 1 week module, you will learn how to use coding to build and design applications using the Swift programming language. You will experiment with programming ideas without building an entire app and learn how to write code, watch it run, change it, and watch it run again. Lastly, you will explore these concepts in Xcode playgrounds, build a word game in a playground, and get started with Interface Builder to build and run your own app that displays a photo.

MODULE 4: Algorithms

In this 2 week module, you will learn about algorithms, which are a set of instructions for accomplishing a task. Building off of the work you've completed in previous modules, you will learn to articulate algorithms to solve problems and use pseudocode to plan the steps of an algorithm before writing and debugging actual code. You will explore sequencing and selection, where the order of instructions is crucial, and choices determine the sequence's flow. Lastly, you will learn to examine conditions at the time your code runs, and your program will proceed along one of many possible paths.

MODULE 5: Build and Design with Playground Basics

In this 2 week module, you will use your knowledge of Playground Basic to build a QuestionBot App. You will be part of a team that's building a chat app called QuestionBot. In doing so, you will only focus on one part of the app, which is to work on QuestionBot's "brain," the part that decides how

to answer questions. Ultimately, you will build knowledge for the bot, a personality to go with it, and give the app a unique behavior of your own design! Other parts of the app, such as the design, user interface, and the parts that take the question and display the answer, have already been completed.

LEARNING ACTIVITIES

Modules are divided into sections:

Get Started

You'll begin by learning the key concepts covered in the unit, exploring how they relate to your everyday experiences, and completing activities that deepen your understanding. By using coding concepts to think about everyday problems, you'll also be learning to think critically, to see the world as a programmer, and to apply computational reasoning.

Play

In this section, you'll apply the key concepts in Xcode playgrounds, where you can experiment with code and see the results immediately. As you complete each activity, you can check your understanding by answering review questions in the book.

You'll also apply your understanding of the unit concepts through fun, creative playground challenges that will help you start thinking about your own app projects.

Later in the book, you'll build simple apps to explore development topics.

Build

You'll be guided through the steps of building an app in Xcode. For this section, you'll want to keep the book open while you're working in Xcode"

Design

You'll explore the impact of computing innovations and experience the app design process. You'll also consider the choices that app designers and developers make, knowing that their app could impact thousands— even millions —of people.

Using the Develop in Swift App Design Workbook, you'll get creative. This is your chance to apply your design thinking, develop a great idea, create an interface, and prototype and test your concept. You'll learn how to consider different perspectives, and how to use feedback from mentors, friends, and diverse users to improve your app.

IN COLLABORATION

Much of the applied learning in this course takes place in an Xcode playground. Playgrounds allow you to write Swift code and immediately see the results in a live preview. Playing with code and seeing what it does is a great way to get started coding and to experiment with new ideas.

LEARNING METHODS

➢ Challenge-based learning activities

➢ Industry experts and credentialed guest speakers provide a rich learning environment.

➢ Instructional methods that support diverse learners

➢ Activities and assessments that tap into learners' prior knowledge and experience and encourage active learning

➢ Authentic assessments that include challenge-based learning, scenarios, and hands-on practice activities

➢ Encouraging learner motivation through selected use cases and project based learning

➢ Scaffolding and chunking of information to support learning of all students

➢ Transparency of course expectations and competencies promoted so learners know what they will be learning and exactly what to do to grasp the concepts.

➢ Encouraging social learning through a learning community

REQUIREMENTS

Software

➢ Visit Apple App Store and download Xcode 13, which requires latest OS Macbook or iPad

Textbook and Needed Resources

➢ Development in Swift Explorations, Fundamentals, and Data Collections.

➢ Apple Design Workbook

PROGRAM FACULTY

DR. KESHA MALLORY JAMES is the Director of Distance Education for Lawson State Community College and the LSCC Apple Tech Hub Program Manager. She led the LSCC Distance Education Program to rank #2 as one of the Best Online Community College Programs in 2019. With her vision, LSCC became 1 of 10 Apple Tech Centers for HBCUs, and she has over 12 years of experience as an instructor in the Business and Information Technologies Department. Dr. James holds a Doctor of Philosophy from Auburn University and is a graduate of Alabama State University. Dr. James is a certified Apple Teacher and Swift coding instructor.

Program Developers

CARL S. MOORE, PHD (CONSULTANT) is a teacher, learning scientist, curriculum developer and instructional designer. He also serves as the Vice President of Teaching and Learning at Howard Community College.

Success Coaches

DR. YASMEEN RAWAJFIH is an Assistant Professor in the Computer Science (CS) Department at Tuskegee University. She received her PhD in Computer Science and Software Engineering from Auburn University. Dr. Rawajfih teaches many core courses in the CS curriculum at Tuskegee University including Software Engineering, Design and Analysis of Algorithms, Statistics, and Data Analytics.

PROFESSOR RUTH OLUSEGUN specializes in AI and Blockchain technologies. Professor Olusegun is an Adjunct Professor at Bowie State University in the Department of Computer Science. She has taught Mathematics, AWS Cloud Computing, and Programming courses. She currently teaches Swift Programming & Mobile App development and Computer Literacy Applications.

REQUIREMENTS: WEB-ENABLED COMPUTER (MAC), CURRENT INTERNET BROWSER