

Swift App Development

Syllabus

» Course Overview

This course introduces students to Swift and prepares students to obtain the App Development with Swift Certification. Students will get an insight into key computing concepts and a strong foundation in programming apps using Swift. Over 7 modules, students will learn everything from absolute basics like planning and designing apps to more complex tasks like using the interface builder and programming using Swift language. The course contains guided tutorials, do-it-yourself projects, and great resources that will help students practice and learn how to work in Swift.

» Course Outline by Module

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|-----------------|--------------------------------------|-----------------|-------------------------------------|
| Module 1 | Planning, Design, and Theory | Module 5 | Arrays |
| Module 2 | Project Navigation | Module 6 | Enumerations and Naming Conventions |
| Module 3 | Interface Builder/iOS | Module 7 | Debugging |
| Module 4 | Functions, Operators, and Structures | | |

» Module Overview and Learning Objectives

| Module 1. Introduction to Agriculture in the Global Economy

Even though each designer may approach an issue differently, we all follow some general procedures. The design process is supported by a cycle of these design steps. The design cycle is a series of phases that takes a design concept and turns it into a final product. Being an iterative and circular process, design inherently repeats itself. After evaluating your product, you'll be able to identify any changes that can be made and return to the Planning stage (or one of the other earlier phases) to determine how to put those improvements into practice. Fit it to your particular project since it is yours to use and play with.

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The fact that design thinking is solution-based rather than problem-based is one of its primary distinguishing features. This means that rather than concentrating on the challenges or constraints of the current problem, it emphasizes positive ideas and practical solutions.

Learning Objectives: In this module, students will:

- Summarize the steps of the design cycle, including brainstorming, planning, prototyping, and evaluation.
- Summarize how sensitive data can be protected and compromised.
 - Sharing personal and application information
 - Security challenges
- Evaluate the legal, ethical, and socioeconomic impacts of compromised data.
- Understand the application lifecycle in iOS.

| Module 2. Project Navigation

You can create different types of files in a Swift project. This module will cover these file types and how you can manage them in the Project Navigator. The Project Navigator allows you to add, remove, organize, and manage additional files in your project. You will learn about the different file types and assets, and how they are used in your project in Swift. You will also familiarize yourself with the user interface of Swift.

Learning Objectives: In this module, students will:

- Differentiate between basic file types.
- Recognize the assets available in a project.
- Define how assets are used.
- Import an asset to a project and use it correctly.
- Select the appropriate actions to hide or show different areas of the user interface.

| Module 3. Interface Builder/iOS

This module will teach students about the various objects that are used to design an application in Swift. Students will learn how to use the Attributes inspector to modify the properties of these objects as well as their views. They will also learn how to use various UIKit objects on their storyboards. Students will learn about linking objects with different classes to make them active.

Learning Objectives: In this module, students will:

- Given a scenario, select the appropriate object(s) on the storyboard or the Document Outline
- Use the Attributes inspector to non-programmatically modify the properties of objects and/or a view
- Connect UIKit objects on the storyboard to a Swift file
 - Differentiate between an IBOutlet and an IBAction
 - Determine when to connect an object as an IBOutlet or an IBAction
- Programmatically modify the properties of objects and/or a view

| Module 4. Functions, Operators, and Structures

This module will teach students about the use of classes and structures in Swift and how functions and operators associated with a class help in accessing them. They will learn to write and evaluate the execution of functions. Students will also learn how to use various operators and calculate the results. They will learn to create and evaluate structures in Swift.

Learning Objectives: In this module, students will:

- Write, call and/or evaluate the execution of functions
 - Evaluate the use of argument labels, parameters and returns
- Calculate the results when using various operators
- Create and evaluate structures
 - Create an instance of a structure
 - Use an instance of a structure
 - Define methods
 - Create an instance of a structure
 - Use an instance of a structure

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| Module 5. Arrays

In this module, students will learn how to create and manipulate arrays in Swift. They will learn how to declare and initialize arrays using values and how to modify the array elements using its index. Students will also learn how to control the flow of an array execution in Swift using loop structures and conditional statements.

Learning Objectives: In this module, students will:

- Create and manipulate arrays
 - Declare and/or initialize an array with values
 - Identify and/or modify an array element using its index
 - Use and/or evaluate array properties and/or methods
- Demonstrate how to control the flow of execution
 - Create, analyze and predict loop structures and their results
 - Create and interpret the outcome of conditional statements

| Module 6. Enumerations and Naming Conventions

In this module, students will learn about the basic guidelines and naming conventions that are used while programming in Swift. They will learn how to create, use and compare custom enumerations. Students will also learn how to declare and evaluate constants and variables of different types of data. Finally, students will gain an understanding of how to use appropriate naming conventions for their Swift files.

Learning Objectives: In this module, students will:

- Create, use and/or compare custom enumerations
- Declare and/or evaluate constants and variables of different data types
 - Differentiate between constants and variables
 - Apply type inference
 - Use explicit typing
- Use the appropriate naming conventions
 - Use appropriate camel casing
 - Apply Swift identifier rules

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| Module 7. Debugging

In this module, students will learn about the basic debugging tools provided by Xcode to detect and resolve bugs in your code. Students will learn how to use the Connections Inspector in Xcode to check if there was a connection error. Students will also learn to find solutions in different error scenarios by interpreting console error messages and using breakpoints.

Learning Objectives: In this module, students will:

- Use the Connections inspector to evaluate whether a connection error has occurred
- Given a connection error scenario, determine a solution
- Differentiate between syntax and run-time errors when building and running an app
- Interpret console error messages
- Recognize the purpose of breakpoints