

## Course Outline

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### Swift Programming

**Duration:** 4 days (24 hours)

#### Objective

- Understand the benefits of Swift and its role in iOS and OS X software development
- Gain experience using Swift's data types and standard library
- Build iOS and OS X apps using Swift
- Learn how Swift supports object-oriented development principles
- Become familiar with the advanced features of the Swift language

#### Target Audience

Developers who would like to build IOS applications

#### Prerequisite

- All attendees must have some previous programming experience (any language)
- Familiarity with object-oriented programming concepts is recommended but not required
- Attendees must have some experience using the OS X operating system (launching applications, working with files, etc.)

#### Topics Covered:

- Introduction
  - Overview of OS X
  - Cocoa Frameworks
  - Overview of iOS
  - Cocoa Touch Frameworks
  - Memory Management
  - Objective-C
  - Swift Language
  - Tour of the Xcode IDE
  - Interactive Playgrounds
- Swift Basics
  - Statements
  - Constants and Variables
  - Type Annotations
  - Type Safety and Inference
  - Type Aliases
- Numeric Types
  - Boolean Type
  - Integer Types
  - Floating Point Types
  - Numeric Literals
  - Numeric Type Conversion
- Operators
  - Assignment
  - Arithmetic
  - Compound Assignment

- Comparison
- Range Operators
- Logical Operators
- Advanced Operators
- Strings and Characters
  - String Literals
  - Mutability
  - Comparing
  - Unicode
- Collection Types
  - Mutability
  - Tuples
  - Arrays
  - Array Literals
  - Dictionaries
  - Dictionary Literals
- Control Flow
  - Loops
  - Conditional Statements
  - Control Transfer Statements
  - Functions
  - Closures
- Functions
  - Parameters and Return Values
  - Parameter Names
  - Default Parameter Values
  - Variadic Parameters
  - In-Out Parameters
  - Function Types
  - Nested Functions
- Closures
  - Closure Expression Syntax
  - Trailing Closures
  - Capturing Values
- Enumerations
  - Syntax
  - Switch Statement
  - Associated Values
- Classes and Structures
  - Properties
  - Lazy Stored Properties
  - Property Observers
  - Instance Methods
  - Type Methods
  - Subscripts
  - Inheritance
  - Overriding
  - Type Casting
  - Initialization
  - Initializer Chaining
  - Deinitialization
  - Nested Types
  - Extensions
- Automatic Reference Counting (ARC)
  - Introduction
  - Reference Cycles

- Weak References
- Unowned References
- Optionals
  - Forced Unwrapping
  - Binding
  - Implicitly Unwrapped Optionals
  - Optional Chaining
- Protocols
  - Syntax
  - Requirements
  - Protocols as Types
  - Delegation
  - Collections
  - Inheritance
  - Composition
- Generics
  - Generic Functions
  - Type Parameters
  - Generic Types
  - Constraints
  - Associated Types
- Debugging
  - Assertions
  - LLDB and the Swift REPL
  - Advanced Swift Debugging in LLDB
- Interoperability
  - Interacting with Objective-C APIs
  - Interaction with C APIs
  - Mixing Swift and Objective-C
  - Migrating an Objective-C Project to Swift

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