

## Introduction to Swift for Beginners

Hands-on Swift Essentials: Swift Programming Basics, Swift Essentials, Practical Application of Swift & More

### Course Snapshot

- **Course: Introduction to Swift for Beginners (TTMBSFT005)**
- **Duration:** 5 days and beyond
- **Skill Level:** Introductory for technical team members
- **Hands-on Learning:** This course is approximately 50% hands-on lab to lecture ratio, combining engaging expert lessons, demos and group discussions with real-world, skills-focused machine-based labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **blended learning format**. Please also ask about our **Self-Paced / Video / QuickSkills** or **Mini-Camp / Short Course** flexible delivery options.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

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### Overview

**Introduction to Swift for Beginners** is a hands-on course designed to get you quickly familiar with Swift and up and running with essential Swift programming skills to a basic level. You'll gain ample practice with Swift code, learning to apply the skills and language in a practical way.

This course is approximately 50% hands-on lab and 50% lecture, designed to train attendees in core swift programming skills, coupling the most effective techniques with the soundest industry practices. Throughout the course you'll be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review. You'll find mini-exercises throughout the course, which are short exercises about the topic at hand. There are also challenges at the end of each module, which are either programming questions or longer coding exercises to test your knowledge.

The project example code in this course is platform-neutral; that means it isn't specific to iOS, macOS or any other platform. The code runs in playgrounds, which you'll learn about in the very first module. You'll be able to play with the code by making changes and see the results immediately.

### Learning Objectives

Working in an interactive learning environment, led by our expert facilitator, you'll explore:

- Expressions, Variables & Constants
- Types & Operations
- Basic Control Flow
- Advanced Control Flow
- Functions
- Optionals
- Arrays, Dictionaries & Sets
- Collection Iteration with Closures
- Strings
- Structures
- Properties
- Methods
- Classes
- Advanced Classes
- Enumerations
- Protocols
- Generics
- Access Control, Code Organization and Testing
- Custom Operators, Subscripts & Keypaths
- Pattern Matching
- Error Handling
- Encoding & Decoding Types
- Memory Management
- Value Types & Value Semantics
- Protocol-Oriented Programming
- Advanced Protocols & Generics

**Need different skills or topics?** If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional ISO / Swift, mobile development, mobile testing, programming, security or other related topics that may be blended with this course for a track that best suits your needs.

**Enhanced Learning Services:** Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services, Case Studies, Knowledge Check Quizzes, Skills Immersion Programs & Camps, Collaborative Mentoring Services and Extended Learning Support & Post Training** services.

## Course Topics / Agenda

*Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We will work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.*

### Section I: Swift Basics

#### Chapter 1: Expressions, Variables & Constants

- How a computer works
- Playgrounds
- Getting started with Swift
- Printing out
- Arithmetic operations
- Math functions
- Naming data
- Increment and decrement

#### Chapter 2: Types & Operations

- Type conversion
- Strings
- Strings in Swift
- Tuples
- A whole lot of number types
- Type aliases
- A peek behind the curtains: Protocols

#### Chapter 3: Basic Control Flow

- Comparison operators
- The if statement
- Loops

#### Chapter 4: Advanced Control Flow

- Countable ranges
- For loops
- Switch statements

#### Chapter 5: Functions

- Function basics
- Functions as variables
- Commenting your functions

#### Chapter 6: Optionals

- Introducing nil
- Introducing optionals
- Unwrapping optionals
- Introducing guard
- Nil coalescing

### Section II: Collection Types

#### Chapter 7: Arrays, Dictionaries & Sets

- Mutable versus immutable collections
- Arrays
- What is an array?
- When are arrays useful?
- Creating arrays
- Accessing elements
- Modifying arrays
- Iterating through an array
- Running time for array operations
- Dictionaries
- Creating dictionaries
- Accessing values
- Modifying dictionaries
- Sets

#### Chapter 8: Collection Iteration with Closures

- Closure basics
- Custom sorting with closures
- Iterating over collections with closures

#### Chapter 9: Strings

- Strings as collections
- Strings as bi-directional collections
- Raw strings
- Substrings
- Character properties
- Encoding

### Section III: Building Your Own Types

#### Chapter 10: Structures

- Introducing structures
- Accessing members
- Introducing methods
- Structures as values
- Structures everywhere
- Conforming to a protocol

#### Chapter 11: Properties

- Stored properties
- Computed properties
- Type properties
- Property observers
- Lazy properties

#### Chapter 12: Methods

- Method refresher
- Introducing self
- Introducing initializers
- Introducing mutating methods
- Type methods
- Adding to an existing structure with extensions

#### Chapter 13: Classes

- Creating classes
- Reference types
- Understanding state and side effects
- Extending a class using an extension
- When to use a class versus a struct

#### Chapter 14: Advanced Classes

- Introducing inheritance
- Inheritance and class initialization
- When and why to subclass
- Understanding the class lifecycle

#### Chapter 15: Enumerations

- Your first enumeration
- Raw values
- Associated values
- Enumeration as state machine
- Iterating through all cases
- Enumerations without any cases
- Optionals

#### Chapter 16: Protocols

- Introducing protocols
- Implementing protocols
- Protocols in the Standard Library

### Chapter 17: Generics

- Introducing generics
- Anatomy of generic types
- Arrays
- Dictionaries
- Optionals
- Generic function parameters

### Section IV: Advanced Topics

**NOTE: Some Advanced topics may be marked Optional / Time Permitting based on audience level and goals.**

### Chapter 18: Access Control, Code Organization and Testing

- Introducing access control
- Organizing code into extensions
- Swift Package Manager
- Testing

### Chapter 19: Custom Operators, Subscripts & Keypaths

- Custom operators .
- Subscripts
- Keypaths

### Chapter 20: Pattern Matching

- Introducing patterns
- Basic pattern matching
- Patterns

- Advanced patterns
- Programming exercises
- Expression pattern

### Chapter 21: Error Handling

- What is error handling?
- First level error handling with optionals
- Error protocol
- Throwing errors
- Handling errors
- Advanced error handling
- Rethrows
- Error handling for asynchronous code

### Chapter 22: Encoding & Decoding Types

- Encodable and Decodable protocols
- What is Codable?
- Automatic encoding and decoding
- Encoding and decoding custom types .
- Renaming properties with CodingKeys.
- Manual encoding and decoding .
- Writing tests for the Encoder and Decoder .

### Chapter 23: Memory Management

- Reference cycles for classes
- Reference cycles for closures

### Chapter 24: Value Types & Value Semantics

- Value types vs. reference types
- Defining value semantics
- Implementing value semantics
- Recipes for value semantics

### Chapter 25: Protocol-Oriented Programming

- Introducing protocol extensions
- Default implementations
- Understanding protocol extension dispatch
- Type constraints
- Protocol-oriented benefits
- Why Swift is a protocol-oriented language

### Chapter 26: Advanced Protocols & Generics

- Existential protocols
- Non-existential protocols
- Recursive protocols
- Heterogeneous collections
- Type erasure
- Opaque return types

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## Student Materials & Lab Environment

All course software (limited versions, for course use only), digital courseware files or course notes, labs / data sets and solutions (as applicable) are provided for you in our “easy access / no install required” high-speed remote lab environment. Our tech team works with every student to ensure everyone is set up with working access and ready to go prior to every course start date, ensuring a smooth delivery and great hands-on experience. Please ask for details.

### For More Information

For more information about our dedicated training services, collaborative coaching services, courseware licensing options, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at [www.triveratech.com](http://www.triveratech.com), email [Info@triveratech.com](mailto:Info@triveratech.com) or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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