

SwiftUI: Views, Navigation & Core Data

16

MODULES

47

TOPICS

33

HANDS-ON LABS

LEARNING OBJECTIVES

- Describe SwiftUI's declarative syntax and compare it with UIKit
- Apply common views and modifiers to build layouts
- Build layouts using stacks, spacers and GeometryReader
- Implement forms with TextFields, Pickers, Toggles and Sliders
- Configure navigation with NavigationLink and NavigationStack
- Manage data flow with State, Binding and ObservableObject
- Implement animations, gestures and grid-based layouts
- Develop apps using MVVM architecture with Core Data and REST APIs

16 Modules, 47 Topics

01

3 Labs

Introduction to SwiftUI

TOPICS

- **Overview of SwiftUI:** History, Framework, and Benefits
- Understanding SwiftUI's Declarative Syntax
- **SwiftUI vs UIKit:** Key Differences
- Structure of a SwiftUI app

02

2 Labs

Views and Modifiers

TOPICS

- Introduction to SwiftUI Views
- **Common Views:** Text, Image, Button, Spacer, Stack (VStack, HStack, ZStack)
- Using Modifiers for styling Views

03

2 Labs

Stacks and Layouts

TOPICS

- Understanding Stack Views (HStack, VStack, ZStack)
- Building layouts with Spacer and Alignment
- Using GeometryReader for responsive layouts

04

2 Labs

Handling User Input with Forms

TOPICS

- Introduction to Form
- Working with TextFields, Toggles, Pickers, and Sliders
- Binding data with @State properties

05

2 Labs

Navigation in SwiftUI

TOPICS

NavigationView and NavigationLink · Creating a Master-Detail Interface · NavigationStack for multi-level navigation

06

2 Labs

Lists and Dynamic Data

TOPICS

Introduction to List View · Displaying static and dynamic data · Working with Arrays and Identifiable Protocol

07

2 Labs

Data Flow with State and Binding

TOPICS

- Managing Data with @State and @Binding
- **Introduction to Observables:** ObservableObject and @Published
- Introduction to Data Persistence with UserDefaults

08

2 Labs

Advanced Data Flow

TOPICS

- Using @EnvironmentObject for global data management
- Passing data across multiple views

09

2 Labs

Customizing Lists

TOPICS

Customizing the appearance of List Rows · Building custom list item views · Adding navigation and actions in list items

10

Lab

Animation and Transitions

TOPICS

Introduction to Animation in SwiftUI · Implicit and Explicit Animations

11

2 Labs

Working with Gestures

TOPICS

- Introduction to Tap, Drag, Rotation, and Magnification Gestures
- Handling multiple gestures in a single view
- Gesture composition

12

2 Labs

Working with Grids and Collections

TOPICS

Introduction to LazyVGrid and LazyHGrid · Working with Grid layouts · Building a dynamic Grid using arrays

13

2 Labs

Styling and Themes

TOPICS

- Customizing appearance with Themes and Styling
- Using Environment values to change global app appearance

14

2 Labs

App Architecture

TOPICS

- Introduction to MVVM (Model-View-ViewModel) Architecture in SwiftUI
- Organizing code using ViewModels
- Separating concerns between Views, Models, and ViewModels

15

Lab

Data Persistence with Core Data

TOPICS

Introduction to Core Data in SwiftUI · Saving and fetching data using Core Data

16

4 Labs

Networking and REST API Integration

TOPICS

- Introduction to URLModule
- Making GET and POST requests
- Parsing JSON data using Codable
- Handling network delays and errors
- Using AsyncImage for displaying images from URLs

Practise What You Learn

#	MODULE	ACTIVITY
01	Introduction to SwiftUI	■ Getting Started with SwiftUI: Create a new SwiftUI project ■ Modify the default ContentView ■ Build a simple “Hello, World!” app
02	Views and Modifiers	■ Creating a Simple Layout: Design a card layout with Text, Image, and Button ■ Apply modifiers: Padding, Background, ForegroundColor, etc.
03	Stacks and Layouts	■ Building a Custom Layout: Create a product card using VStack and HStack ■ Add dynamic alignment and spacing
04	Handling User Input with Forms	■ Building a Simple Form: Build a user profile form using TextField, Picker, and Toggle ■ Validate and display user input
05	Navigation in SwiftUI	■ Creating a Navigation-based App: Build an app with multiple screens using NavigationLink ■ Implement navigation between product categories and details
06	Lists and Dynamic Data	■ Dynamic List with Data: Create a dynamic list of items (e.g., laptops, books) from an array ■ Add functionality to delete, move, and reorder items in the list
07	Data Flow with State and Binding	■ Data Binding and Persistence: Implement a simple counter app using @State and @Binding ■ Persist data across app Modules with UserDefaults
08	Advanced Data Flow	■ Global Data Management: Create an app with global settings using @EnvironmentObject ■ Share data between multiple views
09	Customizing Lists	■ Building a Custom List View: Create a custom List view with navigation to a detailed view for each item ■ Customize list row appearance with images, text, and buttons
10	Animation and Transitions	■ Adding Animations: Create an app with animation on button tap
11	Working with Gestures	■ Implementing Gestures: Build an interactive app with draggable, scalable, and rotatable views ■ Combine multiple gestures in a single view
12	Working with Grids and Collections	■ Dynamic Grid Layout: Display a grid of items (e.g., fruit or products) ■ Make the grid scrollable and responsive using LazyVGrid

#	MODULE	ACTIVITY
13	Styling and Themes	■ Theme-based Customization: Create a light and dark theme for the app ■ Apply consistent styling across all views
14	App Architecture	■ Implementing MVVM Architecture: Build a weather app using MVVM architecture ■ Organize data fetching and display using ViewModel
15	Data Persistence with Core Data	Building a Core Data App: Create a task manager app that stores tasks using Core Data
16	Networking and REST API Integration	■ Fetch Data from REST API: Build an app that fetches data from an API ■ Display the fetched data in a list format ■ Implement error handling for failed network requests ■ Build an app to fetch and display a list of remote images

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

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