UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Mobile App Development
FY2028 / 16 Credits (480 Clock-Hours)

Foundational Courses

Foundational

TEAP 1010 Swift Fundamentals **2 Credits / 60 Clock-Hours**

This introductory course provides a solid foundation in Swift programming and Xcode, Apple's development environment. Students will learn to write and organize code using Swift's core features, including variables, functions, structs, and classes. Emphasis is placed on applying logical reasoning to solve common programming challenges.

Course Objectives:
• Use and navigate Xcode.
• Apply basic Swift syntax to create structs, classes, variables, functions, and related features.
• Apply logical processing to solve common coding problems.

TEAP 1020 Basic SwiftUI **3 Credits / 90 Clock-Hours**

In this course, students are introduced to building user interfaces using SwiftUI, Apple's modern declarative framework. Through hands-on practice, students will create simple views with text, buttons, and styling, while learning how SwiftUI manages state using property wrappers and macros. The course also explores fundamental navigation patterns and introduces architectural concepts like MVVM, helping students to structure and scale their apps effectively.

Objectives:
• Create simple View structs with elements such as text and buttons.
• Explain the difference between declarative and imperative programming.
• Style views using view modifiers.
• Manage state using SwiftUI's property wrappers and macros.
• Build simple navigation structures.
• Explore application architecture, especially MVVM, and apply it in an application.

TEAP 1030 Intro to Computer Science with Swift **2 Credits / 60 Clock-Hours**

This course introduces core computer science concepts through the Swift programming language. Students will explore topics such as computer architecture, operating systems, memory, and storage, while developing a deeper understanding of data structures and algorithms. The course also covers advanced Swift features—including generics and protocols, and teaches students how to design efficient code and debug effectively using industry-standard tools.

Objectives:
• Pass an assessment showing understanding of computer architecture, operating systems, memory, and storage.
• Apply common data structures and algorithms in Swift.
• Architect and optimize Swift code for performance and clarity.
• Implement advanced Swift features such as generics and protocols.
• Use industry-standard tools to debug Swift code.

TEAP 1310 Intermediate SwiftUI **3 Credits / 90 Clock-Hours**

This course builds on foundational SwiftUI skills, guiding students through more advanced interface development techniques. Learners will create custom, reusable views and view modifiers for efficient styling, apply the MVVM architecture to structure apps effectively, and harness SwiftUI's built-in animation tools to enhance user experience. This course helps deepen their SwiftUI knowledge and elevate their app development capabilities.

Objectives:
• Create custom reusable subviews and view modifiers for advanced styling.
• Apply MVVM architecture to app design and development.
• Use SwiftUI's animation tools to enhance user experience.

TEAP 1410 Project Prototyping and Planning **3 Credits / 90 Clock-Hours**

In this preparatory course, students will pitch, plan, and begin prototyping their capstone project. Emphasis is placed on idea development, feasibility assessment, and structured planning to ensure a solid foundation for successful project execution. Students will refine their concepts through feedback and begin building early prototypes that align with their technical goals and user needs.

Objectives:
• Pitch, plan, and begin prototyping a capstone project based on feasibility and feedback

TEAP 1900 Capstone Project **3 Credits / 90 Clock-Hours**

This course is the culmination of the iOS development program, where students design, build, and publish a fully functional iOS application to the App Store. Drawing on all previously acquired skills, students will take their app from concept to deployment, demonstrating their ability to execute a complete development cycle and deliver a professional-quality product.

Objectives:
•Design, develop, and publish an iOS app to the App Store

Supplemental Courses Varies by Institution

Dixie

TEAP 1040 Design Fundamentals **1 Credit / 30 Clock-Hours**

This course introduces the core principles of visual and user experience design. Students will explore layout, balance, contrast, color theory, and typography, gaining a strong foundation in creating effective and aesthetically pleasing designs. The course emphasizes user-centered design practices, introduces Apple's Human Interface Guidelines, and builds proficiency with industry-standard UI/UX tools, preparing students to design intuitive digital experiences.

Objectives:
• Create a design using foundational design principles including layout, balance, and contrast.
• Create a design using color theory in practical design contexts.
• Create a design demonstrating understanding of typography for readability, branding, and user perception.
• Apply UX design principles and best practices to create user-centered experiences.
• Create a design to demonstrate familiarity with Apple's Human Interface Guidelines.
• Create a design to demonstrate proficiency with industry-standard UI/UX design tools.

TEAP 1510 iOS Fast Prototyping Group Project **1 Credit / 30 Clock-Hours**

In this collaborative, hands-on course, students work in teams to rapidly design and prototype original iOS app concepts. Emphasizing creativity, communication, and time management, students will pitch ideas, integrate peer feedback, and develop functional prototypes under real-world time constraints. The course fosters teamwork and agile development practices essential for fast-paced app creation environments.

Objectives:
• Pitch original app concepts and incorporate peer feedback.
• Collaborate effectively in a team environment with minimal supervision.
• Prototype and integrate app features under tight deadlines.

TEAP 1530 Concurrency and Multi-threading **1 Credit / 30 Clock-Hours**

This course introduces the principles and practical applications of concurrency in modern software development. Students will explore legacy approaches using callbacks, then progress to Swift's modern async/await syntax for writing clearer, more maintainable asynchronous code. The course also covers reactive programming with the Combine framework, equipping students to build responsive, efficient, and scalable iOS applications.

Objectives:
• Create an app demonstrating a foundational understanding of concurrency and multi-threading principles.
• Use callbacks to perform asynchronous operations.
• Apply Swift's async/await syntax to write clear asynchronous code.
• Implement reactive programming using the Combine framework.

TEAP 1610 Databases and Networking **3 Credits / 90 Clock-Hours**

This course explores the essential skills required to build data-driven and network-enabled iOS applications. Students will learn to store and manage local data using SQLite, CoreData, and SwiftData, and interact with web services via URLSession and RESTful APIs. Emphasis is placed on clean architecture through techniques like dependency injection, protocol-oriented programming, and the Repository pattern. By the end of the course, students will develop a fully functional app that integrates real-time data with persistent local storage.

Objectives:
• Use SQLite to store and retrieve structured local data.
• Create an app demonstrating understanding of HTTP/HTTPS protocols and standards.
• Integrate CoreData and SwiftData for persistent storage.
• Perform network requests and consume RESTful APIs using URLSession.
• Develop a full app that combines real-time data and local database storage.
• Apply dependency injection for modular and testable architecture.
• Use protocol-oriented programming to enforce separation of concerns.
• Apply the Repository pattern for scalable code organization.

TEAP 1710 iOS Group Project **2 Credits / 60 Clock-Hours**

In this capstone-style course, students collaborate in teams to design, develop, and deliver a fully functional iOS application under real-world time constraints. Emphasizing Agile and Scrum methodologies, students gain hands-on experience with Git and GitHub for version control and collaborative development. The course also offers opportunities to develop leadership skills by managing team dynamics and guiding a project from concept to completion.

Objectives:
• Apply Agile and Scrum methodologies in a collaborative development setting.
• Manage version control and collaboration using Git and GitHub.
• Design and develop a complete iOS application within a set time frame.
• Manage a small team of developers through a full project cycle.

TEAP 1750 Interfacing between UIKit and SwiftUI **2 Credits / 60 Clock-Hours**

This course focuses on bridging the gap between UIKit and SwiftUI in iOS development. Students will learn to integrate legacy UIKit components into SwiftUI using UIViewRepresentable, and embed SwiftUI views within UIKit-based projects. The course covers key UIKit concepts, including the UIView system, MVC architecture, delegates, and data sources. Students will also build custom UI elements and recreate UIKit components using SwiftUI, enabling seamless integration between both frameworks.

Objectives:
• Use UIViewRepresentable to incorporate UIKit components into SwiftUI.
• Apply knowledge of UIKit's UIView system and layout behavior.
• Embed SwiftUI views into UIKit-based projects.
• Recreate UIKit components using SwiftUI equivalents.
• Apply MVC architecture in UIKit-based development.
• Implement delegates and data sources to manage UI behavior and data.
• Build custom UI elements using UIView and programmatic layout.

TEAP 1810 Advanced Topics **2 Credits / 60 Clock-Hours**

This course allows students to explore specialized areas of iOS development beyond the core curriculum. Students will research and present on a self-selected advanced topic, while also gaining hands-on experience with cutting-edge tools and practices. Topics include building RESTful APIs with the Swift Vapor framework, integrating Backend-as-a-Service (BaaS) solutions, utilizing generative AI in development workflows, and writing unit tests with XCTest and Swift Testing.

Objectives:
• Research and present on a self-selected advanced development topic.
• Apply generative AI tools in software development workflows.
• Build and deploy a RESTful API using the Swift Vapor framework.
• Integrate a Backend-as-a-Service (BaaS) into an iOS application.
• Write and execute unit tests using XCTest and Swift Testing.

TEAP 1830 Career Success **2 Credits / 60 Clock-Hours**

This course equips students with the practical skills needed to launch a successful career in the tech industry. From registering a Limited Liability Company (LLC) to crafting a targeted resume and LinkedIn profile, students will learn how to present themselves professionally in both digital and in-person settings. Through mock interviews, networking strategies, and the development of a compelling elevator pitch, students will gain the confidence and tools to stand out in today's competitive job market.

Objectives:
• Identify and complete the steps to start and register an LLC.
• Create a professional resume tailored to tech roles.
• Build a strong LinkedIn profile and practice strategic networking.
• Participate in mock interviews to improve readiness and confidence.
• Deliver a compelling personal elevator pitch.

Mountainland

TEAP 1450 Networking and Data Storage **2 Credits / 60 Clock-Hours**

This course teaches students how to send and receive data using RESTful APIs. They will practice remotely accessing publicly available web services as well as locally hosted servers. They will also be able to store and manage local data with SwiftData and SQLite, and then integrate the two skills to create, retrieve, update, and delete data locally and remotely in preparation for their Full App Development course. Students will also apply SOLID design principles and protocol-oriented programming to their code.

Objectives:
• Send and receive data over the web using HTTP and public APIs.
• Write asynchronous code using Swift's concurrency functionality.
• Store and retrieve data using SwiftData and SQLite.
• Apply SOLID principles to code design.

TEAP 1520 UIKit Overview **2 Credits / 60 Clock-Hours**

In this course, students will practice using UIKit, a UI development framework that uses visual interface builders. Students will build simple UIKit apps, compare its standard MVC design to SwiftUI's MVVM, and learn how to bridge the two frameworks.

Objectives:
• Create basic UI layouts using UIKit's Storyboard composition system.
• Utilize MVC architecture patterns and describe how it differs from MVVM.
• Bridge UIKit and SwiftUI to leverage the strengths of each in a single app.

TEAP 1780 Full App Development **2 Credits / 60 Clock-Hours**

In this course, students will get a chance to practice combining all of the skills they have learned up to this point by building a small functional social media app. They will interface with a private social network run on a server hosted by MTECH where they can interact with other members of their class. They work through a hands-on guided project while designing the client interface to follow Apple's Human Interface Guidelines.

Objectives:
• Apply SwiftUI, networking, data storage, and design skills to create a fully functional social media app.
• Master those skills in preparation for work on the Capstone project.

TEAP 1840 Career Readiness **1 Credit / 30 Clock-Hours**

Students will prepare for their career by analyzing market conditions, exploring post-graduation options, and practicing practical skills. They will briefly work with other programming languages to gain familiarity with the broader market. They'll get hands on experience with job search tasks like resume preparation, LinkedIn profile preparation, and mock interviews. Students will also use the common terminology of the software development industry so they are better able to understand and navigate job listings.

Objectives:
• Prepare for the job application process by creating a resume, creating a LinkedIn profile, and completing mock interviews.
• Work with other programming languages such as Kotlin, JavaScript, Python, and Ruby to explore future skills to add to their resume.
• Navigate the software development industry and its common terminology.

TEAP 1850 Frameworks and Advanced Development **3 Credits / 90 Clock-Hours**

This course will introduce students to several of the frameworks in the iOS development ecosystem that developers use. Students will use these tools to add common functionality like audio/video playback and machine learning, add system-level integration features such as Bluetooth and in-app purchases, add accessibility and localization support, and add other advanced features like AR and VR support. They will practice strategies for learning further frameworks, then present their learnings to their peers, and they discuss new and upcoming technology to stay competitive in the current market.

Objectives:
• Utilize some of the frameworks available from Apple such as AVFoundation, CoreML, StoreKit, Vapor, and more.
• Utilize third party APIs, such as Firebase.
• Teach someone about a framework after independent research.
• Include accessibility and localization features in a project.
• Investigate new Swift features and prioritize their utility

TEAP 1910 Group Final Project I **2 Credits / 60 Clock-Hours**

In this course, students collaborate in teams to iterate on an existing iOS application, updating it to version 2.0. Using the vocabulary of Agile and Scrum methodologies, students gain hands-on experience with Git and GitHub for version control and collaborative development.

Objectives:
• Practice Agile and Scrum methodologies in a collaborative development setting.
• Manage version control and collaboration using Git and GitHub.
• Review an existing codebase and iterate upon it.

TEAP 1920 Group Final Project II **2 Credits / 60 Clock-Hours**

In this course, students continue to collaborate in teams to iterate on an existing iOS application, updating it to version 2.0. Using the vocabulary of Agile and Scrum methodologies, students gain hands-on experience with Git and GitHub for version control and collaborative development. Students are individually tasked with a variety of tickets that require demonstration of ability to apply all previously reviewed concepts to this project.

Objectives:
• Practice Agile and Scrum methodologies in a collaborative development setting.
• Manage version control and collaboration using Git and GitHub.
• Review an existing codebase and iterate upon it.
• Demonstrate mastery of all course objectives