CodeHS

Mobile Apps Course Syllabus
One Semester for High School (70 contact hours)

Course Overview and Goals

Mobile applications are becoming increasingly important to our consumption of media, news, social interaction, and learning. In this course, students will learn how to create mobile apps using React Native, a popular platform-agnostic framework developed by Facebook and used by successful tech companies including Airbnb, Facebook, Instagram, Tesla, and more. As an online blended high school course, students will design and build applications to run on their own smartphones and will use the latest tools and technologies available for mobile app development.

The Mobile Apps course is designed as a one semester course for high school students with at least one year of programming with JavaScript and one year of web design using HTML and CSS. Students will learn the foundations of the React Native framework, components, and how to use components to create scalable, custom, and fast mobile applications. Students will also learn about important computer science topics including state changes, using XML and stylesheet objects, and creating modular app layouts with flex and the Dimensions API.

Learning Environment: The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Students will modify existing code and run it in the browser and on their personal mobile devices with the use of Expo, a free open-source toolchain built for running React Native apps with React and JavaScript, create personalized apps, create digital presentations, and engage in in-person collaborative exercises with classmates. Teachers utilize tools and resources provided by CodeHS to leverage time in the classroom and give focused 1-on-1 attention to students.

Programming Environment: Students modify and run programs in the browser using the CodeHS online editor. Students will be able to modify text-based programs in JavaScript and XML using the React Native framework. Students will run their apps directly on the CodeHS platform as well as their own personal mobile devices with Expo.

Quizzes: Each lesson includes at least one formative short multiple choice quiz. At the end of each module, students take a summative multiple choice quiz that assesses their knowledge of the concepts covered in the module.

Prerequisites: The Mobile Apps course is designed for computer science students with at least one year of JavaScript experience. React Native is a professional framework that has a need for understanding advanced JavaScript concepts such as objects, mapping, and basic logic. HTML and CSS are also recommended for the layout and styling of apps. This course will require students to engage in documentation research and learn to utilize external resources to validate their code.

More information: Browse the content of this course at https://codehs.com/course/4771

Course Breakdown

Module 1: Introduction to Mobile Apps (.5 weeks/2 hours)
In this module, students will be introduced to the mobile apps course and the React Native framework and it's program structure and syntax. Students will also preview some of the tools and technologies they will use to build and run their apps.
Browse the full content of this module at https://codehs.com/library/course/4771/module/10415

Objectives / Topics Covered	● Introduction to React Native and Expo
Example Assignments / Labs	● Introduction to React Native and Expo 　○ Why build mobile apps? 　○ What is React Native? 　○ How is React Native structured and built? 　○ What is Expo and how do React Native apps run? 　○ Example activity: 　　■ Running Apps on Expo

Module 2: Components and the Stylesheet (2 weeks/10 hours)
In this module, students are introduced to components, the backbone of building apps with React Native. They learn about the stylesheet object and how to add custom style attributes to their apps.
Browse the full content of this module at https://codehs.com/library/course/4771/module/10416

Objectives / Topics Covered	● Introduction to Components ● Introduction to the Stylesheet API ● Styling View Components ● Styling Text Components
Example Assignments / Labs	● Introduction to Components 　○ What are components? 　○ How are components imported? 　○ Where are components stored in the CodeHS editor? 　○ How do you debug components? 　○ Example activity: 　　■ Customizing Text 　　■ Debugging Components ● Introduction to the Stylesheet API 　○ What is the Stylesheet API? 　○ How do you style apps? 　○ How do you connect components to the Stylesheet API? 　○ Example activity: 　　■ Connecting Components to the Stylesheet ● Styling View Components 　○ How do you style View components? 　○ How are components justified? 　○ How are components aligned? 　○ What is flex direction? 　○ Example activity: 　　■ Nested Views ● Styling Text Components 　○ How are Text components styled?

	○ What are the common styling attributes for Text components?
	○ Example activity:
	■ News Article Styling
	■ My Favorites List

Module 3: Buttons and Text Boxes (1.5 weeks/7 hours)

In this module, students use the TouchableHighlight to create "buttons" that add a layer of functionality. Students also learn about the TextInput component and how to allow users to enter text into their apps. Browse the full content of this module at https://codehs.com/library/course/4771/module/10417

Objectives / Topics Covered	● TouchableHighlight and the onPress Function ● TextInput

Example Assignments / Labs	● TouchableHighlight and the onPress Function
	    ○ How do you add a TouchableHighlight component?
	    ○ How is the TouchableHighlight component used as a button?
	    ○ What is the onPress function?
	    ○ Example activity:
	        ■ Build a Homepage
	● TextInput
	    ○ What is the TextInput component?
	    ○ Example activity:
	        ■ Google Search Page
	        ■ Feedback Form

Module 4: Advanced Layouts and Images (3 weeks/15 hours)

In this module, students learn how to add images to their apps to further customize the building experience. They gain a deeper understanding of mobile apps layouts using Flex values and the Dimensions API. Browse the full content of this module at https://codehs.com/library/course/4771/module/10418

Objectives / Topics Covered	● The Image Component ● The ImageBackground Component ● Flex Layouts ● Dimensions API

Example Assignments / Labs	● The Image Component
	    ○ What is the Image component?
	    ○ How are image components sized?
	    ○ What is the ImageBackground component?
	    ○ How are ImageBackground components sized?
	    ○ Example activity:
	        ■ Google Search Page with Images
	        ■ Phone Background
	● Flex Layouts
	    ○ What are flex layouts?
	    ○ How do you calculate flex layout ratios?
	    ○ Example activity:
	        ■ Simple Flag with Flex
	        ■ Advanced Flag with Flex
	● Dimensions API
	    ○ What is the Dimensions API?

	○ How can I set the size of components, images, and text using screen height and screen width variables? ○ Example activity: ■ SnapChat Login Page using Dimensions

Module 5: App Build: Recreate a Popular App (1 week/5 hours)
In this module, students apply their knowledge of components, images, buttons, text boxes, and layouts to recreate a screen of a popular app. They will go through this process in steps, taking time to plan their layout and think about the functionality of the app. They may return to the app later to add on additional functions as new concepts are learned.
Browse the full content of this module at https://codehs.com/library/course/4771/module/10419

Objectives / Topics Covered	● App Build: Recreate a Popular App

Example Assignments / Labs	● App Build: Recreate a Popular App
	    ○ How do you plan for an app build?
	    ○ What functionality does the app have?
	    ○ How will you use your knowledge of flex values and the Dimensions API to make your app responsive?

Module 6: Events and State (2 weeks/10 hours)
In this module, students learn how to use state values and how to update the state of their app in various ways to create quick, dynamic programs.
Browse the full content of this module at https://codehs.com/library/course/4771/module/10420

Objectives / Topics Covered	● Introduction to State ● Updating State with onPress ● Using Mathematical Equations to Update State ● Using Methods to Update String States

Example Assignments / Labs	● Introduction to State
	    ○ What is state?
	    ○ What is the state object?
	    ○ How is the state added using JSX?
	    ○ Example activity:
	        ■ Setting the Location with State
	● Updating State with onPress
	    ○ How is the state of an app updated?
	    ○ How do we call functions to update state?
	    ○ Example Activity:
	        ■ Name to Nickname
	● Using Mathematical Equations to Update State
	    ○ How can mathematical equations be used to update state values?
	    ○ Example activity:
	        ■ Easy Calculator
	● Using Methods to Update String States
	    ○ How can we use string methods to update the state of a string?
	    ○ Example activity:
	        ■ Spellchecker

Module 7: Creating Multiple Screens (1.5 weeks/7 hours)

In this module, students learn how to take their apps to the next level by adding in functionality that allows for content and interactivity on multiple screens.

Browse the full content of this module at https://codehs.com/library/course/4771/module/10421

Objectives / Topics Covered	● Creating a Navbar ● Using Buttons to Navigate Screens
Example Assignments / Labs	● Creating a Navbar 　○ What is a navbar? 　○ How do I create a navbar? 　○ How can I use images as buttons in my navbar? 　○ Example activity: 　　■ iPhone Call Navbar ● Using Buttons to Navigate Screens 　○ How can state values be used to create multiple screens? 　○ How can I use buttons in my navbar to navigate to different screens? 　○ Example activity: 　　■ RSVP Tracker

Module 8: Working with Conditionals (2 weeks/10 hours)

In this module, students use conditionals to allow for more flexible apps. They also learn how parameters are used inside functions.

Browse the full content of this module at https://codehs.com/library/course/4771/module/10422

Objectives / Topics Covered	● Conditionals and State Changes ● Conditionals using Parameters
Example Assignments / Labs	● Conditionals and State Change 　○ What are conditionals? 　○ Where are conditionals used? 　○ How can the state be updated conditionally? 　○ Example activity: 　　■ Venmo Balance Transfer: Check Balance ● Conditionals using Parameters 　○ How are parameters passed in React Native? 　○ Example activity: 　　■ Conditional Winner

Module 9: App Build: Currency Converter App (1 week/5 hours)

In this module, students apply their knowledge of components, events, state, conditionals, and more to build a currency converter app. Students use the Stylesheet to create a user friendly layout that can convert multiple currencies!

Browse the full content of this module at https://codehs.com/library/course/4771/module/10423

Objectives / Topics Covered	● Project: Currency Converter App
Example Assignments / Labs	● Project: Currency Converter App 　○ How do you plan for an app build? 　○ What is the best layout for an app? 　○ How do you write pseudocode for an app?

	○ What makes an app presentation engaging?

Supplemental Modules

Supplementary Units	Prerequisite/Recommended Unit(s)	# of activities
Midterm	Components and The Stylesheet, Buttons & Text Boxes, Advanced Layouts & Images, Events & State, Creating Multiple Screens, Working with Conditionals	1 (offline materials found in resources)
Mobile Apps Prerequisite - HTML - CSS - Variables - Conditionals	Can be used to fill gaps for students before beginning course content	116
End of Course App Build	Complete all units in main course	6
Designing User Interfaces	Complete all units in main course	56