1.002 Course syllabus

Module description

Mobile technology, including smartphones and tablets, has been a significant technology platform in recent times and the mobile app ecosystem is a significant driver of both innovation and employment. Mobile development is, therefore, a critical applied area of computer science. This course will support you in getting started in mobile development, and it builds on material such as databases, networking and web development taught elsewhere in the programme.

This module is designed to give you an overview of the mobile development ecosystem as well as how to design, develop and test create cross-platform mobile apps built using React Native.

Learners get to achieve the above through a heavily practical approach, using a mixture of weekly programming exercises, code demonstrations, videos and quizzes.

Module goals and objectives

After completing this module, you will be able to:

1. Design an apps user interface based on a set of requirements and goals,
2. Critically discuss UX techniques used by prominent applications,
3. Design wireframes to inform the testing and development process,
4. Replicate different design styles across devices,
5. Create accessible applications,
6. Create responsive applications that adapt to device requirements,
7. Design and create UI elements, linking them to actions,
8. Utilise navigation systems across devices,
9. Assess the use and performance of more advanced UI elements such as scroll views and table views,
10. Create precise and useful unit tests to help monitor the performance of an application,
11. Integrate API’s within your application. Making authenticated requests,
12. Access and use sensors found on mobile devices, e.g. camera, accelerometer,

13. Create app bundles that can be submitted to the relevant app stores.

Textbook and Readings

Specific essential readings are available for each week and are included on the Coursera page.

Module outline

Week 1	**Key concepts:** The mobile app ecosystem **Learning outcomes:** - Understand the limitations and advantages of different platforms - Discuss the elements of apps you enjoy - Understand the course structure
Week 2	**Key concepts:** The mobile app ecosystem (continued) **Learning outcomes:** - Understand the limitations and advantages of different platforms - Discuss the elements of apps you enjoy - Understand the course structure
Week 3	**Key concepts:** Mobile user interface design **Learning outcomes:** - Understand the need for wireframing - Discuss the link between psychology and design decisions - Understand and identify different design styles and replicate them using code

Week 4	**Key concepts:** Mobile user interface design (continued) **Learning outcomes:** - Understand the need for wireframing - Discuss the link between psychology and design decisions - Understand and identify different design styles and replicate them using code
Week 5	**Key concepts:** Programming user interfaces **Learning outcomes:** - User JSX to create basic elements on the screen - Understand the need for pagination - Understand and be able to use UI elements in React Native
Week 6	**Key concepts:** Programming user interfaces (continued) **Learning outcomes:** - User JSX to create basic elements on the screen - Understand the need for pagination - Understand and be able to use UI elements in React Native
Week 7	**Key concepts:** Advanced user interface elements **Learning outcomes:** - To develop stronger understandings of advanced techniques - Use advanced methods of interaction - Understand and program animations
Week 8	**Key concepts:** Advanced user interface elements (continued) **Learning outcomes:** - To develop stronger understandings of advanced techniques - Use advanced methods of interaction

	- Understand and program animations
Week 9	**Key concepts:** Developing a mobile app project **Learning outcomes:** - Learn advanced javascript techniques - Understand and implement testing - To discuss what makes efficient programming
Week 10	**Key concepts:** Developing a mobile app project (continued) **Learning outcomes:** - Learn advanced javascript techniques - Understand and implement testing - To discuss what makes efficient programming
Week 11	**Key concepts:** Data sources **Learning outcomes:** - To handle and manipulate data - To understand the importance of data ethics - To understand what data sources include
Week 12	**Key concepts:** Data sources & final project (continued) **Learning outcomes:** - To start work on the final project - To give feedback on others ideas - To develop an idea for the final project
Week 13	**Key concepts:** Integrating cloud services **Learning outcomes:**

	- To download information from the cloud - To detect and deal with unstable internet connections - To understand what constitutes cloud computing
Week 14	**Key concepts:** Integrating cloud services (continued) **Learning outcomes:** - To download information from the cloud - To detect and deal with unstable internet connections - To understand what constitutes cloud computing
Week 15	**Key concepts:** Sensor programming **Learning outcomes:** - How to best use a sensor - How to communicate with a sensor - Understand what a sensor is
Week 16	**Key concepts:** Sensor programming (continued) **Learning outcomes:** - How to best use a sensor - How to communicate with a sensor - Understand what a sensor is
Week 17	**Key concepts:** Introduction to API's **Learning outcomes:** - To discuss API's - Understand how to implement APIs in applications - Continue learning about API's and their uses
Week 18	**Key concepts:** Deployment

	Learning outcomes: - To understand the distribution process - To understand what code signing entails - To learn what is required to deploy an app from expo
Week 19	**Key concepts:** Deployment (continued) **Learning outcomes:** - To understand the distribution process - To understand what code signing entails - To learn what is required to deploy an app from expo
Week 20	**Key concepts:** Graded Assignment: Final project **Learning outcomes:** - To demonstrate your ability to create mobile apps - To submit your final project

Module activities

- **Lecture videos**
  In each week the concepts you need to know will be presented through a collection of short video lectures. You may stream these videos for playback within the browser by clicking on their titles or download the videos.

- **Practice Quizzes**
  Topics include practice quizzes, intended for you to assess your understanding of the content. You will be allowed unlimited attempts at each practice quiz. There is no time limit on how long you take to complete each attempt at the quiz. These quizzes do not contribute toward your final score in the class.

- **Practice Programming exercises (hack-it tasks):**
  Every week you will apply what you learned by completing short, engaging

programming exercises. These assignments do not contribute toward your final score in the class.

- **Graded Assignments:**
  There are two graded assignments, CW1 is worth 30% of the final module grade and CW2 is worth 70% of the final module grade. Each of these assignments is comprised of multiple parts which learners work on during earlier weeks. All assignments will be graded by the project tutors.

- **Discussion Prompts:**
  Topics also include discussion prompts. You will see the discussion prompt alongside other items in the lesson. Each prompt provides a space for you to respond. After responding, you can see and comment on your peers' responses. All prompts and responses are also accessible from the general discussion forum and the topic discussion forum.

- **Readings:**
  Topics may include several suggested readings. They are good supplementary materials for you to further understand the module topics.

How to pass this module

The module has two major assessments:

1. CW1 (30%): This assignment comprises a portfolio of assignments completed in the weeks prior.
2. CW2 (70%): This assignment is a more substantial programming project and supplementary material, which is extensively detailed in week 10.

This is a detailed breakdown of all the marks:

Activity	**Required?**	**Deadline week**	**% of final grade**
CW1 Midterm submission	Yes	12	30%
CW2 Final project submission	Yes	21	70%