

**Master Course Syllabus**  
School of Engineering and Computer Science  
Washington State University Vancouver

**CS 458**

**Mobile Application Development**

3 Semester Hours

(3 lecture hours)

**Catalog Description**

Design and Development of Mobile Applications. Introduction to mobile application frameworks, including user interface, sensors, event handling, data management and network communication.

**Prerequisite Courses**

- CS 223 with a C or better, or CS 224 with a C or better, or CS 360 with a C or better

**Prerequisite Topics**

- Comfortable developing and debugging C programs.
- Experience using libraries that provide common data structures like lists and dictionaries.
- Some familiarity with object oriented concepts (encapsulation, polymorphism, containers, iterators).

**Measured Course Outcomes**

Students taking this course will:

1. Construct a mobile application using industry relevant programming languages, frameworks, and toolchains. (Contributes to performance criteria 2-b.)
2. Construct an application using a framework targeting a problem domain specific to mobile devices. (e.g., using an accelerometer, gyroscope, geolocation, etc.) (Contributes to performance criteria 6-c.)

**Covered Course Outcomes**

Students taking this course will also:

1. Demonstrate comprehension of developer licensing agreements associated with distribution of mobile application software. (Relevant to performance criteria 4-b.)

**Required Textbooks**

None

**Reference Material**

- Apple developer resources (Available online)

**Major Topics Covered in the Course**

1. Event Driven Programming (UI event loop, Threading for background tasks).
2. Model View Controller (MVC) pattern in User Interface Design.

3. Objected Oriented Programming (OOP) techniques for Graphical User Interface software development.
4. Mobile application frameworks.
5. Mobile application issues (limited resources, I/O, multi-touch and gestures, sensors, camera, compass, accelerometer, GPS, location).
6. Graphics, Animation as user interface cues.
7. Common UI's for mobile devices (Navigation controllers, tab bars, table views)
8. Data persistence and communication

## **Projects**

<b>Programming Project Area</b>	<b>Weeks</b>
Final project utilizing mobile frameworks or APIs	4

## **Design, Implementation, and Analysis**

This course requires the student to correctly implement a number of applications for mobile devices. In addition to the final project, the student will implement at least one application featuring navigation between views and one application utilizing either data persistence or web-based APIs.

## **CS2013**

This course provides coverage of CS2013 knowledge areas. Values listed are minimum course hours dedicated to the topic, percentages indicate the fraction of CS2013 knowledge area topics covered (acceptable values are: <25%, 25-75%, >75%, or 100%).

<b>Area</b>	<b>Tier 1</b>	<b>Tier 2</b>	<b>Elective</b>
GV/Fundamental Concepts	2 (25-75%)		
HCI/Foundations	1 (<25%)		
HCI/Designing Interaction		1 (<25%)	
HCI/Programming Interactive Systems			4 (25-75%)
HCI/New Interactive Technologies			1 (<25%)
PBD/Introduction			5 (25-75%)
PBD/Mobile Platforms			3 (25-75%)
PL/Event-Driven and Reactive Programming		2 (25-75%)	
SDF/Development Methods	1 (<25%)		

Course Coordinator:	Paul Bonamy
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