CSCI 6905: Topics in Computer Science
Topic: Mobile Development
Summer 2022

Class Meeting	Online
Instructor	Dr. Mark Hills
Office	Science & Technology Building, C-110
Office Hours	Tuesday 2:00pm – 4:00pm Wednesday 10:00am – 11:00am Thursday 1:00pm – 3:00pm Or, by appointment (just email to set up a time).
Phone	252-328-9692
Email	hillsma@ecu.edu (response within 24 hours during the week, possibly longer on weekends)
Chat	MS Teams
Course web page	https://ecu.instructure.com/

Course Summary

This course provides a practical foundation for developing mobile applications, while also looking at current research in mobile application development, mobile hardware and software, and IoT. Students will learn the tools and techniques used to build and deploy mobile applications, including how to use common mobile services such as maps and location services, and will complete a number of related homework assignments. Students will also read, discuss, and summarize current research papers, will produce a research report on a topic related to the course material, and will present this report to the class through a recorded lecture video, potentially including a demo.

Prerequisites

There are no specific prerequisites for this course. For students entering on the non-traditional track, you should not take this course before SENG 5000. The language used in this course is Kotlin, and resources are being posted in advance of the course in case you are not familiar with this language. Having a good programming background will make learning a new language easier, especially given the pace of this course, and there are good educational resources for moving from Java to Kotlin. Familiarity with object-oriented concepts common in languages such as Java, C++, and C#, is assumed.

Learning Outcomes

After taking this course, you should be able to:

- Design and develop mobile applications for modern Android devices
- Create effective UI tests for mobile user interfaces
- Integrate common mobile APIs to support services such as remote data storage, maps, and location services
- Support online crash reporting and automate multi-device testing
- Understand and apply the basics of internationalization and accessibility
- Navigate current research literature related to mobile application development, mobile hardware and software, and the Internet of Things (IoT)
- Summarize this literature effectively into a report and presentation that will be shared with other students in the class

Tools and Applications

The following applications may be used in this course:

- App Development: Java, Kotlin, and Android Studio
- Source Control: Git and GitHub
- Databases: SQLite and Firebase
- Testing: JUnit, Mockito, the AndroidX Test Library, and Espresso
- Paper Creation: Overleaf, Word, or Google Docs
- Recording Creation: Camtasia, Canvas Studio Recorder, or MS Teams

Textbooks

The required text for this course is *Android Programming: The Big Nerd Ranch Guide (4th Edition)*, by Bill Phillips, Chris Stewart, Kristin Marsicano, and Brian Gardner. Either paperback or (if available) electronic versions of this book are fine. Prior editions will not work since they did not use Kotlin, and a lot has changed in Android development since the prior editions came out!

Research material will be available through the ECU Joyner Library proxy, which will provide access to all papers discussed as part of the class. This will also be used for identifying papers for the research report and recorded lesson.

Other helpful material, including references to books, tutorials on the web, links to papers, and videos will be posted as the course progresses.

Exams

The midterm exam for the course will be available from Thursday, June 2nd to Saturday, June 4th, on Canvas. The final exam for the course will be available from Monday, June 20th to Tuesday, June 21st (final exam day is officially June 21st), also on Canvas. More details about the exams will be available closer to the exam dates. Both are timed exams.

Note: you will not need a proctor for the exams in this course. All exams will be administered through Canvas.

Grading

Students will be evaluated based on the combination of class activities. The final grade will be assessed with the following criteria:

Grading	
A	≥ 90
B	≥ 80
C	≥ 70
F	< 70

This grade is based on the following relative weights of the various activities:

Weighting	
Midterm Exam	15%
Final Exam	15%
Chapter Quizzes	10%
Online Research Discussions	10%
Research Project/Lesson	20%
Homework Assignments	30%

Homework assignments will be due weekly. Details on the research project/lesson, with specific dates and deliverables, are available on Canvas.

Student conduct

Students are expected to abide by the university's Student Honor Code. The homework that you do is a critical part of your education. Each student is expected to do his or her own work, except where teamwork is explicitly allowed or required. That does not mean you are not allowed to discuss your ideas with other students. Working in groups can be beneficial, and I encourage you to talk through ideas with other students. But outright copying is plagiarism and is unacceptable. Students who copy other students' work, or who allow their work to be copied, or who copy their work from other sources, such as the internet, are violating the ECU academic integrity policy. Not only that, if you are copying your answers instead of doing the work yourself, you are essentially missing the

entire point of this course, which will come back to haunt you when you don't know this material during an interview with a potential employer.

Other potential academic integrity violations are cheating, falsification, multiple submissions of the same work in different classes, and attempts at any of these violations. Please see http://www.ecu.edu/cs-studentlife/policyhub/academic_integrity.cfm for more details.

Academic integrity violations can result in a grade penalty up to and including an F for the course. Violations may also be reported to the ECU Office of Student Rights and Responsibilities (OSRR).

Other Policies

No incompletes will be issued in this course except for extraordinary circumstances, and even then, only if you are nearly done already, and have done work of acceptable quality, so that you have a realistic chance to pass the course.

All assigned work is due by the posted due date and time. Late submissions will not generally be accepted. If for some reason you are not able to complete the assignment on time, you must contact me directly with an explanation and request an extension before the deadline. If something comes up and you are having trouble keeping up with the class, talk to me right away, ***don't wait until the end of the term!***

Course participation is an important part of the course. Please read any assigned readings in a timely fashion, do the assignments promptly, type in and experiment with code examples, read and discuss assigned research papers, and ask questions on MS Teams.

Material to review, including recorded lectures and research papers, will be made available at the start of each week. I recommend that you watch the material the day it is released, start reading the papers right away, and send any questions as soon as possible. Falling behind will make the course more difficult than it would otherwise be.

All code, test scripts, and other software artifacts for your homework assignments must be stored in GitHub (**this is not optional**). I will not accept assignments submitted through Canvas or emailed to me. If you have questions about your code, check it in to the related GitHub repository, that way I can easily look at it. Do not email me code snippets or screenshots of code, I cannot run either.

Continuity of Instruction

In the event of a campus emergency that disrupts academic activities, course requirements, deadlines, and grading percentages are subject to change. Information about changes in the course will be communicated as soon as

possible by email, and on Canvas. Students are encouraged to continue the readings and other assignments as outlined in this syllabus or subsequent syllabi.

Copyright on Course Materials

Course materials, including programming assignments and lecture notes, can only be publicly shared or used for commercial purposes if given permission. This is covered by ECU copyright regulations, available at http://www.ecu.edu/prr/10/40/02, which state the following:

> 7.1.3. Notes of classroom and laboratory lectures, syllabi, exercises and other course materials taken by Students shall not be deemed Student Works, may only be used for personal educational purposes, and shall not be used for commercialization by the Student generating such notes or by any third party without the express written permission of the author of such Works. Violation of University Policy may be grounds for disciplinary action pursuant with the ECU Student Conduct Process.

Weather emergencies

In the event of a weather emergency, information about ECU can be obtained through the following sources:

ECU emergency notices   http://www.ecu.edu/alert
ECU emergency information hotline 252-328-0062

Students with disabilities

East Carolina University seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a disability must be registered with the Department for Disability Support Services located in Slay 138 ((252) 737-1016 (Voice/TTY)).

For more information, please see http://www.ecu.edu/cs-studentlife/dss/.

Caveats

Occasionally, it may be necessary to revise this syllabus due to extenuating circumstances. I reserve the right to revise this syllabus if the need arises. If I do so, I will provide you with advance notice.