COLLEGE OF ENGINEERING
Department of Computer Sceince and Engineering
CMPS 312 Mobile Application Development
Fall 2022

Instructor Information

Name: Dr. Mohammad Saleh
Academic Title: Associate Professor
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Phone: 4403 4257
Email: mohd.saleh@qu.edu.qa
Office Hours:
Female: Tuesday 03:30 PM - 04:20 PM, 0262, C07
Male: Thursday 03:30 PM - 04:20 PM, F212, BCR

TA Information

Name: Abdulahi Mohamed Hassen
Office: BCR-H209
Phone: 4403 6670
E-mail: abdulahi@qu.edu.qa

Class/Laboratory Schedule

Theory:
- L51: Sunday and Tuesday 10:00 AM - 10:50 AM, 0105, C07- Female Engineering Bldg.
- L01: Sunday and Tuesday 11:00 AM - 11:50 AM, 0213, B05- Main Men's Building

Laboratory:
- B51: Tuesday 03:30 PM - 06:20 PM, 0262, C07- Female Engineering Bldg.
- B52: Wednesday 02:00 PM - 04:50 PM, 0262, C07- Female Engineering Bldg.
- B01: Thursday 03:30 PM - 06:20 PM, F212, BCR- Corridor
- B02: Tuesday 12:00 PM - 02:50 PM, F212, BCR- Corridor

Coordinator Information

Same instructor

Course Information

Catalog Description:

Concepts, principles, design strategies, tools and frameworks to design and develop mobile applications, on modern mobile platforms, that make use of key mobile sensors and system services and connect to online data sources and Web services. Hands on experience in designing and constructing mobile apps using a mainstream development platform and framework such as Android or iOS.

Credits:

3 Credit Hours.

Contact Hours:

2 Lecture hours and 3 Lab hours.

Prerequisites:
CMPS 251

Textbook(s):
Bill Phillips, Chris Stewart and Kristin Marsicano; *Android Programming: The Big Nerd Ranch Guide*, ISBN: 9780135257555, 4th Edition, 2019, Big Nerd Ranch Guides (available at OReilly eBooks via QU Online library).

References:
- Online official android website https://developer.android.com/index.html - Dawn Griffiths and David Griffiths; *Head First Android Development*, ISBN: 9781492076520 3rd Edition, 2021, O'Reilly Media, Inc. (available at OReilly eBooks via QU Online library).

Course Objectives:
- Engineer effective mobile applications using established mobile architectures and design patterns.
- Design and implement modular, efficient and responsive mobile applications that make use of various mobile sensors and services.
- Employ best practices and state-of-the art application frameworks and development tools to design and build mobile applications and connect them to the cloud.

Course Learning Outcomes (CLO):
1. Design a mobile application based on established design patterns and best practices.
2. Design and implement an interactive and effective user interface for a mobile application.
3. Practice integrating on-device sensors, local data stores and Cloud services.
4. Design, implement and test a mobile application using appropriate features, tools and application programming interfaces (APIs) of the mobile development platform.

Relationship of Course Outcomes to Student Outcomes (SO):

Course Learning Outcomes (CLO)	Related Student Outcomes (SO)					
	1	2	3	4	5	6
1		√				√
2		√				
3		√				
4		√			√	√

Student Outcomes (SO):

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

Topics Covered:

Topics	**Weeks**	**Chapters**
Kotlin programming language	1	Online readings
Kotlin Object-Oriented Programming (OOP), Collections and Lambda	1	
Android Fundamentals	1	1
User Interface (UI) development: Components and Layouts	1	3, 6, 14, 22
Display Lists including search and sort	1	9
Navigation	1	Online readings
Model-View-ViewModel (MVVM) Architecture	1	4, 19
Coroutines for asynchronous programming	1	Online readings
Using Web API	1.5	Online readings
Data management using SQLite and Room	1.5	11
Firebase Cloud Services: Firestore, Cloud Storage & Firebase Authentication	1	Online readings
Background processing	1	27
Camera, Google Maps, and Location-aware apps	1	15, 16
Review & Exams	1	
Total	15	

Method of Instruction

The course learning outcomes will be achieving using PBL (Project-Based Learning):

- The Project is an integrative application development project covering all learning outcomes of the course. Students work in groups and they will need to allocate additional time outside of class to work on the project, enrich their learning, practice and reinforce the concepts and skills introduced in scaffolding sessions and/or case studies.

Learning Activities

To achieve the course learning outcomes, students will carry out several learning activities while working on the project. Students will also gain a number of skills related to team work, cooperative learning, …etc.

Assessment Methods and Grading Policy

Group Project:	100%
Phase I	50%
Code	30%
Documentation	5%
Knowledge & Skills Assessment	10%
Team Player Assessment	5%
Phase II	50%
Code	30%
Documentation	5%
Knowledge & Skills Assessment	10%
Team Player Assessment	5%

*Failing Knowledge & Skills Assessment and/or Team Player Assessment results in reducing your other grades by a factor of the failing grade.

ABET Contribution of Course to Professional Component

Math & Basic Science : 0%
Engineering : 0%
Engineering Design : 100%
General Education : 0%

Computer/Software Usage

Android Studio, GitHub, Visual Paradigm

Laboratory Projects

NA

Course Ground Rules

- Please arrive on time. University attendance policies will be enforced. Attendance will be taken during each class meeting. You are responsible for all material covered and all announcements made in class. Classes will start on time. No one should be more than 5 minutes late.
- Use of electronic devices such as smartphones and tablets is strictly prohibited during the lecture. Switch off mobile phones during lecture time, pay utmost attention to lecture. Please try your best to minimize distraction for your classmates.
- Do not hesitate to ask if you have any question about any of the material discussed during the lecture.
- Academic Honesty such as plagiarism (cheating on an exam, submitting work that is not your own) will not be tolerated. The university rules will be enforced in case of cheating and plagiarism. Students must submit their own work without copying from the Internet or from other students. Students could be asked to explain their implementation. A student who shares code with another student will be treated the same as the person who

does the copying. Outsourcing or getting external help to complete assignments is strongly prohibited, and disciplinary actions will be taken if outsourcing is confirmed.

University Code of Conduct

QU expects its students to adopt and abide by the highest standards of conduct in their interaction with professors, peers, staff members and the wider university community. Moreover, QU expects its students to act maturely and responsibly in their relationships with others. Every student is expected to assume the obligations and responsibilities required from them for being members of the QU community.

As such, a student is expected not to engage in behaviors that compromise their integrity, as well as the integrity of QU. Further information regarding the University Code of Conduct may be found on the web at http://www.qu.edu.qa/students/code-of-conduct

Support for Students with Special Needs

It is Qatar University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Needs Section will exert all efforts to accommodate for individuals' needs.

Contact Information for Special Needs Section:
Tel-Female: (00974) 4403 3843
Tel-Male: (00974) 4403 3854
Location: Student Activities Building
Email: specialneeds@qu.edu.qa

Academic Support and Learning Resources

The University Student Learning Support Center (SLSC) provides academic support services to male and female students at QU. The SLSC is a supportive environment where students can seek assistance with academic coursework, writing assignments, transitioning to college academic life, and other academic issues. SLSC programs include: Peer Tutoring, the Writing Lab, Writing Workshops, and Academic Success Workshops. Students may also seek confidential academic counseling from the professional staff at the Center.

Contact Information for Students Support and Learning Resources:
Tel: (00974) 4403 3876
Fax: (00974) 4403 3871
Location: Female Student Activities Building
E-mail: learningcenter@qu.edu.qa

Student Complaints Policy

Students at Qatar University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more

information about the policy and processes related to this policy, you may refer to the student handbook.

Declaration

This syllabus and contents are subject to changes in the event of extenuating circumstances. The instructor (with approval of the Head of Department) reserves the right to make changes as necessary. If changes are necessitated during the term of the course, the students will be notified by email communication and posting the notification on the online teaching tool Blackboard. It is the student's responsibility to check on announcements made while they were absent.

Faculty Name: Dr. Mohammad Saleh
Last Modified: 17/8/2022