COLLEGE OF ENGINEERING
Department of Computer Sceince and Engineering
CMPS 312 Mobile Application Development
Fall 2020

Instructor Information

Name: Dr. Abdelkarim Erradi
Academic title : Associate Professor
Office: 132 Female Engineering Building
Phone: 4403 4254
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Office Hours:
Female: Sunday 12:15-1:15pm
Male: Tuesday 12:15-1:15pm

TA Information

Name:Abdulahi Mohamed Hassen
Office: BCR-H209
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Class/Laboratory Schedule

Theory:
- L51: Sunday & Tuesday 10 – 10:50am (Female) at C07- Female Engineering Bldg. 0144
- L01: Sunday & Tuesday 11 – 11:50am (Male) at BCR- Corridor C201

Lab:
- B52: Wednesday 2:00 pm - 4:50 pm (Female) at C07- Female Engineering Bldg. 0103
- B53: Tuesday 12:00 pm - 2:50 pm (Female) at C07- Female Engineering Bldg. 0103
- B01: Thursday 3:30 pm - 6:20 pm (Male) at BCR- Corridor F212

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 website for android 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 and implement user interfaces for mobile applications based on established patterns and approaches such the Model View Controller pattern.
2. Apply different programming strategies for building mobile applications using Android platforms
3. Practice accessing data sources and Web services from mobile applications.
4. Design and construct complete end-to-end mobile application using state-of-the-art application frameworks, application programming interfaces (APIs) and development tools.

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	2	Online readings
UI components & layout design	2	1, 6, 9 & 10
Activity and fragment lifecycle	1	3 & 8
App Navigation	1	12 & 14
Asycnrounous progamming	1.5	Online readings
Data management	1.5	11
Accessing Web API	1	24
Backround services and Notifications	1	27
Permissions and intents	1	15 & 23
Sensors, location and maps	1	Online readings
Review & Exams	1	
Total	14	

Method of Instruction

The course is taught through lectures, examples, demos, laboratory hands-on activities and assignments and a project. Lectures will cover theoretical concepts and principles related to Mobile application development. Extensive examples will be used to illustrate the taught principles. A weekly lab session will include hands-on in-lab assignments. The approach adopted is project oriented learning by developing hands-on assignments and a project to reinforce the concepts introduced in the lectures. Throughout the course, students perform hands-on exercises that build their practical knowledge and skills to design, build and test mobile applications on the Android platform.

Learning Activities

To achieve the objectives of the course, students will carry out several learning activities:

1. **Readings**: The lectures will follow the topics listed in the course schedule. The students are expected to read the assigned textbook chapter, online resources and slides. The reading assignments will elaborate on information presented in the lectures. **Each student is responsible for reading all related material prior to each lecture.** Students are expected to learn independently as much as needed in order to complete the course requirements.

2. **Lectures**: students are expected to attend every lecture; this is where the course material will be discussed and ambiguities clarified. Class participation is highly encouraged. The technologies to be applied in the project and the assignments will be presented in the lectures via examples and demos. Students are required to practice and extend the examples and the demos provided.

3. **Lab Activities**: Lab activities / assignments will be given so that students practice and apply the material covered in class. Multiple practical Lab activtives on mobile application development are carried out individually. Each Lab will require the students to practice the material learned during the course.
4. **Exams:** The midterm and the final exams have a theoretical part and a practical programming part to build a solution to a simplified problem.

Project: Students will complete a mobile application project with significant use cases. The course project involves designing and building a mobile application delivered in 2 phases. The project is carried out in groups of three students and it will require the students to leverage the material learned during the course to design and implement a real-world mobile application. The project is used as a tool to help the students reinforce concepts and gain a hand-on experience. It also offers an opportunity to study covered concepts in more depth and to apply them to realistic scenarios

Assessment Methods and Grading Policy

Lab Assignments:	30% (5 out of 6)
Project Phase 1 :	15%
Project Phase 2 :	15%
Midterm Exam:	10%
Midterm Practical Exam:	10%
Final Exam:	10% (Consult final exams timetable)
Final Practical Exam:	10% (During the last Lab)

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

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, sumitting 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. Abdelkarim Erradi
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