



COLLEGE OF INFORMATION TECHNOLOGY
DEPARTMENT OF INFORMATION TECHNOLOGY
COURSE SYLLABUS/ SPECIFICATION

Course Code & Title: ITCS 518 – Mobile Application Development
Weight: (3-0-3)
Prerequisite: None
NQF Level Allocated: 9

NQF Notional Hours / Credits: 120 notional hours/ 12 NQF credit

Description: The course discusses the principles of design and development for mobile device applications. Students will learn how to develop, simulate, and test Android applications. The topics covered include Android platform; mobile hardware; cell networks; mobile architectures, operating systems, languages, development environments and simulators, and user interfaces; location-based services; data storage and retrieval.

Objective:

1. To explain how to design, develop, test and deploy Android mobile applications using modern mobile development tools.
2. To study the application of layout management and multi-layout techniques to create adaptable user interfaces for mobile applications that share a common data model.
3. To discuss the management of user data and multimedia on a mobile device via the Android framework libraries.
4. To explain how sensors available on mobile devices enhance user interaction and feedback

Semester: Second 2018-2019

Instructor (s): Dr. Karim Hadjar

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Intended Learning Outcomes (ILOs):

A. Knowledge and Understanding		NQF Descriptor/ Level
A1	Concepts and Theories: Demonstrate knowledge and understanding of key concepts and techniques of programming environments to design, code, test and deploy mobile applications	Knowledge: theoretical understanding [Level 9]
A2	Contemporary Trends, Problems and Research: Recognize the current computing issues and research on emerging mobile computing technologies.	Knowledge: theoretical understanding [Level 9]
A3	Professional Responsibility: Demonstrate an awareness of professional ethics and responsibilities related to Mobile application development through case studies dealing with real life examples	Knowledge: theoretical understanding [Level 9]

B. Subject-specific Skills		NQF Descriptor/ Level
B1	Problem Solving: Design, code, test and deploy efficiently mobile applications having in mind the different designs, techniques of coding and deployment of mobile applications discovered through research.	Skills: Communication, ICT and Numeracy Skills [Level 9] Knowledge: Practical Understanding [Level 9] Competence: Context [Level 8]
B2	Modeling and Design: Design the architecture of mobile applications which comprises the user interface and its components and the main functionalities of the mobile application by having in mind the different designs of mobile applications discovered through research.	Skills: Communication, ICT and Numeracy Skills [Level 9] Knowledge: Practical Understanding [Level 9] Competence: Context [Level 8]
B3	Application of Methods and Tools: Use and apply appropriate development tools such as Android Studio to develop and manipulate mobile applications.	Skills: Communication, ICT and Numeracy Skills

		[Level 9] Knowledge: Practical Understanding [Level 9] Competence: Context [Level 8]
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C. Critical-Thinking Skills		NQF Descriptor/ Level
C1	Analytic skills: Critically evaluate and test the results of output of the developed mobile applications.	Generic cognitive skills [Level 9]
C2	Synthetic: Construct and reuse the multiple components of software/system for developing the mobile applications.	Generic cognitive skills [Level 9]
C3	Creative Thinking and innovation: Create efficient Modern User Interfaces for the mobile applications.	Generic cognitive skills [Level 9]

D. General and Transferable Skills (other skills relevant to employability and personal development)		NQF Descriptor/ Level
D1	Communication: Express and communicate ideas effectively, in written and oral form to their colleagues and/or Instructor, as appropriate.	Communication, ICT and Numeracy Skills [Level 9]
D2	Teamwork and Leadership: Work effectively as a member/leader of a team of technical people who may plan, design, implement, manage, monitor a project	Competence: Autonomy & Responsibility [Level 9] Competence: Learning to learn [Level 9]
D3	Organizational and Developmental Skills: Engage in life-long learning and continuing self-development to hone professional and organizational skills. Assimilate effective work habits including but not limited to time management	Competence: Learning to learn [Level 9]
D4	Ethics and Social Responsibility: Recognize, accept, and follow ethical and social responsibility and respond positively to the needs of society by identifying, employing and utilizing effectively the advanced computing and information solutions and technologies	Competence-Insight [Level 8]

Course Structure (Outline)

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Week	Hours		ILOs	Topics	Teaching Method	Assessment Method
	Lec	Lab				
1	3	-	A1, D4	Android Introduction	Lecture/ Lab session demo	-
2	3	-	A1, D4	Android Development Tools	Lecture	Class Participation (A1)
3	3	-	A1, B2, B3, C2, D1	Android First Application	Lecture/ Lab session demo, Exercises	Class Participation (A1,D1)
4	3	-	A1, B2, B3, C2, C3, D1	Android Structure of the Application	Lecture/ Lab session demo	Class Participation (A1,D1)
5	3	-	A1, B1, B3, C1, C2, D1, D3	Android UI Part 1: TextView, ImageView, ScrollView	Exercises	Class Participation (A1,D1)/ Programming Project 1 (A1, B1, B3, C1, C2, D1, D3)
6	3	-	A1, B2, B3, C1, C2	Android Activity	Lecture/ Lab session demo, Exercises	Class Participation (A1)
7	3	-	A1, B1, B2, B3, C1, C2, D1	Android UI Part 2: MediaPlayer, Button, Start a new Activity	Lecture	Class Participation (A1,D1)/ Midterm Exam (A1, B1, B2, B3, C1, C2)
8	3	-	A1, B1, C1, D1	Exporting Android App	Lecture, Exercises	Class Participation (A1,D1)

9	3	-	A1, B3, C1, C2, D1	Debugging Android App	Lecture/ Lab session demo, Exercises	Class Participation (A1,D1)
10	3	-	A1, B1, B2, B3, C1, C2, C3, D3	Android UI Part 3: EditText, RadioGroup, RadioButton	Lecture/ Lab session demo, Exercises	Class Participation (A1) / Programming Project 2 (A1, B1, B2, B3, C1, C2, C3, D3)
11	3	-	A1, A2, A3,B1, B2, C1, C3	Android UI Part 4: EditText, TextView, Button Form Validation	Lecture, Exercises	Class Participation (A1)
12	3	-	A1, A2, A3,B1, B2, C1, C3	Android UI Part 5: ListView.	Lecture/ Lab session demo, Exercises	Class Participation (A1)
13	3	-	A1, A2, A3, B1, C1, C2, C3, D3, D4	Android UI Part 6: Action Bar.	Lecture, Exercises	Class Participation (A1)/ Research Assignment (A1, A2, A3, B1, C1, C2, C3, D3, D4)
14	3	-	A1, A2, A3, B1, C3, D4	Android UI Part 7: WebView. & Android Database SQLite	Lecture, Exercises	Class Participation (A1,D4)
15	3	-	A1, A2, A3, B1, B2, B3, C1, C2, C3,	Putting It All Together, Student presentations and reports of team research projects	Lecture, student presentations	Class Participation (A1,D1)/ Evaluation of

			D1, D2, D3,D4			Team Project Presentations & Reports (A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2, D3,D4)
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* Formative assessment

Teaching Materials:

Textbook(s):	Reto Meier and Ian Lake, <i>Professional Android (4th edition)</i> , Wrox, 2018, ISBN: 978-1118949528
Handout(s):	Power point slides, http://www.ahlia.edu.bh/moodle .
Reference(s):	<ol style="list-style-type: none"> 1. Teg Hagos, <i>Learn Android Studio 3</i>, Apress, 2018, ISBN: 978-1484231555 2. Mark Wickham, <i>Practical Android: 14 Complete Projects on Advanced Techniques and Approached</i>, Apress, 2018, ISBN: 978-1484233320 3. Neil Smyth, <i>Android Studio 3.0 Development Essentials – Android 8 Edition</i>, CreateSpace Independent Publishing Platform, 2017, ISBN: 978-1977540096 4. B. Phillips and B. Hardy, <i>Android Programming: The Big Nerd Ranch Guide</i>, Big Nerd Ranch Guides, 2013. 5. I. G. Clifton, <i>Android User Interface Design: Turning Ideas and Sketches into Beautifully Designed Apps</i>, Addison-Wesley Professional, 2013. 6. Google Android Studio, https://developer.android.com/studio/ 7. Google, Android Developer Resources, https://developer.android.com/index.html

Assessment

Method of Assessment	Description	Learning Outcomes	Weighting
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Research Assignment	The assignment consists of essay, problem-solving and research based theoretical questions including topics covered in weeks 13 and 14. The purpose of the assignment is to assess students individually where they have to demonstrate their extensive and detailed knowledge and critical awareness of current research, trends and advancements in mobile applications. The assignment will also assess students' skills in designing, coding, testing and deploying efficient and interactive mobile applications having in mind the different designs, techniques of coding and deployment of mobile applications discovered through research. Soft copy submission is required by the end of the 10 th week through the course page in Moodle where answers will be checked by Turnitin against plagiarism. Any implementation code developed during this assignment will have to be submitted also electronically to be tested and evaluated.	A1, A2, B1, C1, C2, C3, D3, D4	10%
Programming Project 1	Students will be asked (individually) to use and apply appropriate development tools such as Android Studio to develop and manipulate specific mobile applications. The output of the programming project should be submitted electronically by the end of week 6 to be tested and evaluated. Student programs will be evaluated in lab sessions where students have to justify their choices of the design and architecture of the developed applications.	A1, B1, B3, C1, C2, D1, D3	8%
Programming Project 2	Same as Project 1 where students has to code, test and deploy interactive mobile applications with more emphasizes on the use of creative efficient Modern User Interfaces, communication, telephony, graphics and multimedia components. Students will be assessed also on their skills to construct and reuse multiple components of the mobile application. The output of the programming project should be submitted electronically by the end of week 11 to be tested and evaluated. Student programs will be evaluated in lab sessions where students have to justify their choices of the design and architecture of the developed applications.	A1, B1, B2, B3, C1, C2, C3, D3	8%
Class Participation	Students will be questioned orally to demonstrate their understanding and knowledge of the topics covered during class lectures and lab sessions. Feedback will be given to students to reaffirm their learning outcomes.	A1, D1, D4	Formative
Midterm Exam	The midterm exam will be an in-class 1-hour exam that will consists of short-answer, essay, and problem solving questions and cover the topics studied in the first 7 weeks. Students will be asked to design and write the code of some components of mobile applications.	A1, B1, B2, B3, C1, C2	18%

Team Research Project (Report and Presentation)	Starting from week 4, the class will be divided into teams of 4-5 students where each team will be asked to study a research problem in mobile application development utilizing the knowledge, skills and tools learned in class. Teams are required to plan and execute the research project that must involve a main component of designing, coding, testing and deploying efficient and interactive multimedia mobile applications. In the final week, each team will have to submit their research report (worth 10%) explaining the research problem, research methods used, analysis and the conclusion highlighting the research findings and results. The report must explain precisely the work accomplished by each student. Each team will be required to make a presentation (worth 6%) summarizing the research conducted and its findings. Each team member has to participate in the presentation. Team-based work will be examined and evaluated as a whole as well as the individual work of each student. Team members will be tested individually during the presentation by peers and the instructor.	A1, A2, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	16%
Final Exam	The final exam is comprehensive and will be of two hours duration. It will consist of short-answer, essay and problem-solving questions. Students will be asked to design and write the code of some components of mobile applications.	A1, A2, B1, B2, B3, C1, C2, C3	40%
Overall:			100 %

Admissions	
Pre-requisites	None
Minimum number of students	4
Maximum number of students	20