COURSE DESCRIPTION FORM: CS-4039: SOFTWARE FOR MOBILE DEVICES

COURSE DESCRIPTION FORM

INSTITUTION FAST School of Computing, National University of Computer and Emerging Sciences, Islamabad

PROGRAM TO BE EVALUATED BS-CS: **Fall 2021**

Course Description

Course Code	CS-4039
Course Title	Software For Mobile Devices
Credit Hours	3
Prerequisites by Course(s) and Topics	Object Oriented Programming, Database Systems, Object Oriented Analysis and Design
Grading Policy	Relative grading (MCA)
Policy about missed assessment items in the course	Retake of missed assessment items (other than midterm/ final exam) will not be held. For a missed midterm/ final exam, an exam retake/ pretake application along with necessary evidence are required to be submitted to the department secretary. The examination assessment and retake committee decide the exam retake/ pretake cases.
Course Plagiarism Policy	Plagiarism in project or midterm/ final exam may result in F grade in the course. Plagiarism in an assignment will result in zero marks in the whole assignments category.
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	***100% Theory*** Assessment Items

Assessment Item	Number	Weight (%)
Assignments	4	20
Midterm Exam	1	15
Home tasks +Class Participation	2	5
Project	1	30
Final Exam	1	30

Course Instructors	Saad Salman
Lab Instructors (if any)	
Course Coordinator	Saad Salman
URL (if any)	
Current Catalog Description	Mobile Application Platform Introduction, Mobile Application design and development lifecycle, Core Application components in the Android, Navigation Patterns, Data Persistence Methods, Mobile User Experience.

Textbook (or **Laboratory Manual** for Laboratory Courses)	Android Programming Concepts by Trish Cornez, Richard Cornez, ISBN- 13:9781284070705 The Busy Coder's Guide to Android Development by Mark L. Murphy
Reference Material	Android Material Design Guidelines
Course Learning Outcomes	**A. Course Learning Outcomes (CLOs)** The course covers generic principles in design and development for mobile devices, plus practical hands on work doing design and development for one or more contemporary platforms, which may vary from year to year. Mobile device architecture undergoes constant evolution, and there are several competing platforms, such as iPhone and the Android Devices. After completion of the course, the student shall be able to: 1. To explain the key differences between development of systems to run on mobile devices and on typical personal computing or internet-based environments and apply this knowledge in the design of mobile device software. 2. To design and prototype effective applications for a mobile device by taking into consideration the underlying hardware-imposed restrictions such as screen size, memory size and processor capability. 3. To Build, Test and Debug graphical applications for mobile devices by using the standard libraries that are bundled as part of the developers' toolkit for the mobile device. 4. To critically analyze and communicate the differences in architecture and specialized topics such as user experience between applications on the mobile device and non-mobile platforms 5. To independently research topics in mobile application architecture and/or security and/or performance 6. To work in a team to execute a complete mobile app project from ideation to design, prototype, development, testing and deployment. To formally present the project-work to the peers.

B. Program Learning Outcomes

1. Computing Knowledge	Apply knowledge of mathematics, natural sciences, computing fundamentals, and a computing specialization to the solution of complex computing problems.	✔
2. Problem Analysis	Identify, formulate, research literature, and analyze complex computing problems, reaching substantiated conclusions using first principles of mathematics, natural sciences, and computing sciences.	✔
3. Design/ Develop Solutions	Design solutions for complex computing problems and design systems, components, and processes that meet specified needs with appropriate	✔

	consideration for public health and safety, cultural, societal, and environmental considerations.	
4. Investigation & Experimentation	Conduct investigation of complex computing problems using research-based knowledge and research based methods.	✔
5. Modern Tool Usage	Create, select, and apply appropriate techniques, resources and modern computing tools, including prediction and modelling for complex computing problems.	✔
6. Society Responsibility	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal, and cultural issues relevant to context of complex computing problems.	
7. Environment and Sustainability	Understand and evaluate sustainability and impact of professional computing work in the solution of complex computing problems.	
8. Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of computing practice.	
9. Individual and Team Work	Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.	✔
10. Communication	Communicate effectively on complex computing activities with the computing community and with society at large.	✔
11. Project Management and Finance	Demonstrate knowledge and understanding of management principles and economic decision making and apply these to one's own work as a member or a team.	
12. Life Long Learning	Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological changes.	✔

C. Mapping of CLOs on PLOs
(CLO: Course Learning Outcome, PLOs: Program Learning Outcome

		PLOs											
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CLOs	1	✔		✔		✔				✔			
	2	✔	✔	✔		✔				✔			
	3	✔	✔	✔		✔				✔	✔		✔
	4	✔	✔	✔		✔				✔			✔
	5	✔		✔	✔	✔				✔			✔

	6	✔	✔			✔				✔			✔

Topics covered in the course with number of lectures on each topic (assume 15 weeks of instruction and 1.5 hour lecture duration)

Topics	Lectures
Introduction to Mobile Computing Platforms. Introduction to Android Architecture, Android App Components	3
Activities and Intents, Android Layouts, Fragments, Navigation	4
Shared Preferences, Recycler View	3
SQLite Database, Google Map	3
Google Firebase	2
Threads, Web Services	4
Notifications, Push Notifications, Services, Broadcast Receivers	3
Career development in Mobile Application Into to Flutter	2
Mid Term and final Review	2
Project Presentations	2

Laboratory Projects/Experiments Done in the Course

Programming Assignments Done in the Course

Yes, All topics were covered

Class Time Spent (in percentage)

Theory (%)	Problem Analysis (%)	Solution Design (%)	Social and Ethical Issues (%)
50	25	20	5

Oral and Written Communications

Every student is required to submit at least __2___ written reports of typically _3____ pages and to make __1___ oral presentation of typically ____10___ minutes' duration.