Course Specification
(Bachelor)

Course Title:	Mobile Applications Development
Course Code:	CSC1303
Program:	Bachelor in Computer Science
Department:	Computer Science
College:	Computers and Information Technology
Institution:	University of Tabuk
Version:	1.0
Last Revision Date:	27 July 2022

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (7)					
4. Course general Description:					
This course is concerned with the development of mobile applications. Emphasis is placed on the processes, tools, and frameworks required to develop mobile applications. This course goes through the process of building a mobile application from scratch. Flutter development environment will be used as a basis for teaching mobile programming techniques. Upon the completion of this course, students will be able to create professional applications for mobile devices using a cross-platform development environment.					
5. Pre-requirements for this course (if any):					
CIT1303: Advanced Web Design					
6. Co-requisites for this course (if any):					
N/A					
7. Course Main Objective(s):					

1. Realize the importance of building mobile application through working across multiple operating systems.
2. Design mobile applications with more than one user interface and more than one system component.
3. Develop a mobile application using Dart programming language through Flutter development environment.
4. Evaluate the performance of the developed mobile applications based on preset criteria.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		

No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Identify various concepts of mobile programming that make it unique from programming for other platforms	**K2,K3**	Lectures Labs Group discussions	Midterm exam Final exam Assignments
1.2	Recognize Mobile platform's organization, patterns and programming mechanisms and be able to use them effectively to develop mobile applications	**K2,K3**	Lectures Labs Group discussions	Midterm exam Final exam Assignments
1.3	Critique mobile applications on their design pros and cons.	**K4**	Lectures Case studies Group discussion	Midterm exam Final exam Assignments
1.4	Recognize the capabilities and limitations of mobile devices	**K2,K3**	Lectures Group discussions	Midterm exam Final exam Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
2.0	Skills			
2.1	Create and build a strong mobile app design from start to finish.	**S2,S4**	Lectures Labs Case study	Assignments Projects
2.2	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces	**S3**	Lectures Labs Case study	Assignments Projects
2.3	Build and develop a professional-quality mobile application that addresses a real-world problem in an innovative way	**S4**	Labs Case study	Assignments Projects
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate effective team work skills	**V2**	Group discussion Case study	Projects

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Flutter and Dart Programming Language: General introduction on Dart programming language, Google SDK. Lab: Introducing the IDE to students.	**4**
2.	Dart Programming Part 1 – Syntax: first dart application, variables and data types in dart. Lab: implementing the variables and data types in dart.	**4**
3.	Dart Programming Part 2 – Syntax: Number and Boolean data types in dart, string data type, and final an const concepts in Flutter. Lab: implementing the Number and Boolean data types in dart, string data type, and final an const concepts in Flutter.	**4**
4.	Dart Functions & Object-Oriented Programming (OOP) Part 1: inheritance, abstract, polymorphism. Lab: implementing the above topics.	**4**
5.	Dart Functions & Object-Oriented Programming (OOP) Part 2: inheritance, abstract, polymorphism. Lab: implementing the above topics.	**4**
6.	Introduction to Flutter: write basic programs in Flutter. Lab: Writing basic programs in Flutter.	**4**

7.	Flutter Widgets Fundamentals Part 1: Hot reload and hot restart in Flutter, Sateful widgets, build context. Lab: implementing the Hot reload and hot restart in Flutter, Sateful widgets, build context.	4
8.	Flutter Widgets Fundamentals Part 2: Adding images, basic button types, and dropdown button. Lab: implementing the above topics.	4
9.	Navigation and Routing Part 1: using navigator push, navigator pop, defining named route, using on generated route, submitting data to new pages, using constructors for submitting data. Lab: implementing the above topics.	4
10.	Navigation and Routing Part 2: using navigator push, navigator pop, defining named route, using on generated route, submitting data to new pages, using constructors for submitting data. Lab: implementing the above topics.	4
11.	Visual, Behavioral, and Motion-Rich Widgets implementing Material Design – Part 1 Lab: implementing the above topics.	4
12.	Visual, Behavioral, and Motion-Rich Widgets implementing Material Design – Part 2 Lab: implementing the above topics.	4
13.	Firebase: introduction to Firebase, products offered by Firebase, Firebase pricing policy. Lab: implementing the above topics.	4
14.	Location-Aware Apps: Using GPS and Google Maps to locate the mobile device Lab: implementing the above topics.	4
15.	Application Testing and Publishing: use the emulator to test real-time application. Lab: implementing the above topics.	4
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Midterm exams**	6,12	30%
2.	**Project**	8	15%
3.	**Assignments**	5, 8, 12	15%
4.	**Final Exam**	15	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Payne, Rap. ***Beginning App Development with Flutter: Create Cross-Platform Mobile Apps***. Apress, 2019.
Supportive References	Biessek, Alessandro. ***Flutter for Beginners: An Introductory Guide to building cross-platform mobile applications with Flutter and Dart 2***. Packt Publishing Ltd, 2019.
Electronic Materials	Napoli, M.L., 2019. ***Beginning flutter: a hands on guide to app development***. John Wiley & Sons.
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classroom**
Technology equipment (projector, smart board, software)	**White board, projector, computer, and internet connection**
Other equipment (depending on the nature of the specialty)	**Flutter Software** **Visual studio code**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching	Faculty, Program Leaders, and Advisory Board	Both Direct and Indirect
	Students	Indirect
Effectiveness of Students Assessment	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Both Direct and Indirect
Quality of Learning Resources	Faculty, Students, and Advisory Board	Indirect
The Extent to which CLOs have been Achieved	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Direct (as in section B) and Indirect/Surveys
	Students	Indirect
Other	-	-

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	

DATE	