Course Specification
(Bachelor)

Course Title:	Mobile Applications Development
Course Code:	415CIS-3
Program:	Bachelor of Information Systems
Department:	Information Systems
College:	CSIS
Institution:	Najran University
Last Revision Date:	01/02/2025

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A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 8)					
4. Course General Description:					
This is an advanced programming course that teaches students the skills necessary to develop mobile applications and also provides extensive hands-on practice by creating multiple real life applications. Students will learn about the mobile application development framework and its design patterns, various user interface elements, event handling, database connectivity, web connectivity, device to device messaging, cloud to device messaging, interfacing with third party libraries, geolocation APIs and interfacing with device sensors.					
5. Pre-requirements for this course (if any)**:**					
6. Co-requisites for this course (if any)**:**					
7. Course Main Objective(s):					
Students will learn how to develop software for mobile devices.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	50	100%
2	E-learning		

No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	20
2.	**Laboratory/Studio**	25
3.	**Field**	
4.	**Tutorial**	5
5.	**Others (specify)**	
Total		50

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Use flutter framework in developing hybrid mobile applications.	K1,K3,K2	Lectures, active learning, collaborative and cooperative learning and independent study assignments are used as teaching strategies. • Showing and delivering PPT presentation in the class. • Using white board to explain important points in more detail.	Following methods are used to assess student's knowledge acquire in this course. • Quizzes • Assignments • Lab Exam • Midterm • Final Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			• Motivating students to be active during class by asking questions regularly during lecture. • Motivating students to work in home, to search from internet, to read related reference books by giving them assignments related to real world problem solving and Java implementation. • Let students to solve the problems related to real world problems and Dart implementations in small groups and giving correction on their solution during class. • Motivating students to be active during class by asking questions regularly. Giving students' tutorials related to importance of Dart language and its implementation etc	
2.0	**Skills**			
2.1	Apply android widgets and responsive layouts	**S4**	• Using the Dart language in a	Following methods are used

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	to develop mobile applications in flutter.		typical program on white board for students to make them more familiar with various problem-solving techniques. • Let students to solve the problems related to the use of Flutter from Application Programming Interface in small groups and giving correction on their solution during class. • Motivating students to be active during class by asking questions regularly. • Let students to present their work after group discussion session. Giving students' tutorials related to importance of abstract class, interface and differentiate between method overloading and method overriding. • Motivating students to work in home, to search from	to assess student's knowledge acquire in this course. • Quizzes • Assignments • Lab Exam • Midterm Final Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			internet, to read related reference books by giving them assignments. Use of Flutter to implement differentTechniques.	
2.2	Design graphics and multimedia based mobile applications in flutter.	**S2**	• Using the Flutter in a typical program on white board for students to make them more familiar with various problem-solving techniques. • Let students to solve the problems related to the use of Flutter from Application Programming Interface in small groups and giving correction on their solution during class. • Motivating students to be active during class by asking questions regularly. • Let students to present their work after group discussion session. Giving students' tutorials related to importance of abstract class, interface and differentiate between method overloading and method overriding.	Following methods are used to assess student's knowledge acquire in this course. • Quizzes • Assignments • Lab Exam • Midterm Final Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			• Motivating students to work in home, to search from internet, to read related reference books by giving them assignments. Use of Dart to implement differentTechniques.	
2.3	Apply various events handling processes on appropriate flutter widgets for user interaction.	**S3, S1**	• Using the Dart language in a typical program on white board for students to make them more familiar with various problem-solving techniques. • Let students to solve the problems related to the use of Dart from Application Programming Interface in small groups and giving correction on their solution during class. • Motivating students to be active during class by asking questions regularly. • Let students to present their work after group discussion session. Giving students' tutorials related to importance of abstract class, interface and differentiate	Following methods are used to assess student's knowledge acquire in this course. • Quizzes • Assignments • Lab Exam • Midterm Final Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			between method overloading and method overriding. • Motivating students to work in home, to search from internet, to read related reference books by giving them assignments. Use of Flutter to implement different Techniques.	
3.0	**Values, autonomy, and responsibility**			
3.1	Develop database-driven mobile applications in flutter and firebase.	**C1, C3**	•Demonstrate the efficient use of Flutter. •Compute and calculate the area of different geometric shapes which requires numerical analysis and skills. •Assigning exercise program during the lab. •To illustrate the important components of communication skills and based on developing critical skills, observations, experiments, and feedback. Encouraging & motivating the students to use the library and internet resources.	Following methods are used to assess student's knowledge acquire in this course. • Quizzes • Assignments • Lab Exam • Midterm Final Exam

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction of hybrid application development	1
2.	Flutter vs ONIC vs react native	2
3.	Introduction to Flutter	2
4.	Introduction To Dart The reason why Dart holds the fort strong. Installing Visual Studio Code and the Dart Plugin. Installing Dart SDK. Writing the first Dart Program.	4
5.	Setting up Flutter Downloading/Cloning the Flutter SDK. Installing Flutter Plugin within VS Code. Understanding the structure of a Flutter Project. Building a simple app from scratch.	1
6.	Introducing Widget Widgets and their role in a Flutter app. The MaterialApp and Scaffold widget. AppBar. FloatingActionButton. More widgets - Text, Center and Padding. Hot Reload and Hot Restart, the tricks of the trade. Recreating the Default Flutter App (UI Only).	4
7.	Introducing Widget Widgets and their role in a Flutter app. The MaterialApp and Scaffold widget. AppBar. FloatingActionButton. More widgets - Text, Center and Padding. Hot Reload and Hot Restart, the tricks of the trade. Recreating the Default Flutter App (UI Only).	4
8.	Common Widget in Flutter Containers and their role. Importing images from a network. Importing images as assets. Adding icons to widgets. Understanding Row and Column. ListView and ListTile. Building views using ListView.builder. Inkwell and its importance.	4
9.	Stateless and Stateful Widgets- The Concept Stateless vs. Stateful widgets. Defining a ‘State’. The setState() method. Returning to the Default Flutter App.	4
10.	Navigating through Navigation	3

	Navigator and routes. Applying push() using MaterialPageRoute. Applying pop(). Declaring parameter-less routes (pushNamed()) in MaterialApp widget.	
11.	Handling User Input. Using TextField. Handling changes to a TextField. Pass retrieved values using Navigator.	3
12.	User Interface Applying ThemeData. The Basic Screen Layout. Applying Custom Font.	5
13	Asynchronous Functions The 'Future' function. 'async' and 'await'.	5
14	Working with Remote Data The 'http' package. Model Class and JSON parsing. Dising Remote Data. (NEWS API).	5
15	Using 3rd Party Packages The 'url_launcher' package. Adding onTap() to NEWS API.	3
Total		50

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Quizzes**	5th, 11t	**10%**
2.	**Midterm**	6th, 10th	**15%**
3.	**Assignment**	12th	**10%**
4.	**Lab Performance**	Throughout semester	**15%**
5.	**Lab Final Exam**	14th	**10%**
6.	**Final Exam**	16th	**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	Reto Meier, "Professional Android 4 Application Development", John Wiley & Sons, Inc, 3rd edition (2012), ISBN: 978-1-118-10227-5 Beginning App Development with Flutter: Create Cross-Platform Mobile Apps Book by Rap Payne
Supportive References	To be determined by the instructor.
Electronic Materials	TutorialPoint.com/android
Other Learning Materials	YouTube videos about Android

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, laboratories
Technology equipment (projector, smart board, software)	projector, board, android studio software
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of Students assessment	Instructor	Direct
Quality of learning resources	Instructor	Direct
The extent to which CLOs have been achieved	Faculty, Program Leaders	Direct
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**17th Department Council**
REFERENCE NO.	**14460810-0976-00017**
DATE	**10/02/2025**