Republic of Yemen
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Sana'a University
Faculty of Computer & IT
Quality Assurance Unit

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة ـ صنعاء
كلية الحاسوب وتكنولوجيا المعلومات
وحدة ضمان الجودة

Course Specification of Application Development

Course No (..................)

2020/2021

Head of Department	Vise Dean for Qulity Assurance	Dean of the Faculty	Dean of Development center and Quality Assurance
Assoc. Prof. Mansour N. Ali	Dr. Anwar Al-Shamiri	Dr. Nagi Al-Shibani	Assoc. Prof. Dr.Huda Al.Emad
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I. Course Identification and General Information:

1	**Course Title:**	Application Development				
2	**Course Code & Number:**					
3	**Credit hours:**		C.H			TOTAL
		Th.	Seminar	Pr	Tr.	
		2	-	2	-	*3*
4	**Study level/ semester at which this course is offered:**	3rd Level -1st Semester				
5	**Pre –requisite (if any):**	Database Fundamentals, Object-oriented Programming				
6	**Co –requisite (if any):**	None				
7	**Program (s) in which the course is offered:**	IT , CS				
8	**Language of teaching the course:**	English/Arabic				
9	**Study System**	Term based system				
10	**Mode of delivery:**	Full time				
11	**Location of teaching the course:**	Faculty of Computer and Information Technology				
12	**Prepared By:**	Dr. Anwar Al-Shamiri				
13	**Date of Approval**					

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II. Course Description:

This course introduces students to programming technologies, design and development related to mobile applications. Topics include accessing device capabilities, industry standards, operating systems, and programming for mobile applications using an OS Software Development Kit (SDK). Moreover, the course covers the modern computer concepts, such as software, data distribution models, location awareness, networking, and telephony. The concepts in this courses are platform independent. Thus, lecturers are not tided to certain platform but have the choice to select the development environment either iOS, Android or any other platform. Upon completion, students should be able to create basic applications for mobile devices.

III. Course Intended learning outcomes (CILOs) of the course (maximum 8CILOs)		Referenced PILOs (Only write code number of referenced Program Intended learning outcomes)
a.1	Demonstrate understanding of the engineering design cycle (discover- evaluate, design- evaluate, develop- evaluate, deliver- evaluate) and how it works as a practical problem-solving method	A1
a.2	Describe different types of components used in mobile platforms.	A2
b.1	Determine the requirements that will be used to design and develop the mobile applications.	B1
b.2	Distinguish between the different required techniques that should be used during the process of developing mobile applications.	B3
c.1	Develop mobile applications using the platform application programming interfaces.	C1,C2

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c.2	Use different concepts and techniques during the development process of mobile applications.	C3
d.1	Work effectively either individually or in groups to accomplish the assigned task.	D1
d.2	Conduct in-class presentations including demonstration of application	D2

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Demonstrate understanding of the engineering design cycle (discover- evaluate, design- evaluate, develop- evaluate, deliver- evaluate) and how it works as a practical problem-solving method	– Active lectures, discussions. – Exercises and home works – Laboratory based session	– Written tests – Assignments – Projects
a2. Describe different types of components used in mobile platforms.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

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b1. Determine the requirements that will be used to design and develop the mobile applications. **b2**. Distinguish between the different required techniques that should be used during the process of developing mobile applications.	– Active lectures – Interactive class discussions – Exercises and home works – Laboratory based session interactive	– Written tests – Assignments – Projects

(C) **Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:**

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1.Develop mobile applications using the platform application programming interfaces. **c2**.Use different concepts and techniques during the development process of mobile applications.	– Exercises and home works – laboratory based session – Independent learning	– Assignments – Projects

(D) **Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:**

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

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d1. Work effectively on managing and creating mobile application.	– Project – Independent learning – group learning	– Assignments – Project – presentation
d2. Work effectively either individually or in groups to accomplish the assigned task.		

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Getting Started	a1,a2,b1,d1	▪ What's is mobile application? ▪ Compare Mobile devices vs. desktop devices. ▪ Architectures of mobile operating system ▪ Obtaining required tools ▪ Creating virtual device ▪ Launching first application	1w	2
2	Using IDE for application development	a1,a2,b1,c1,d1	▪ Exploring the IDE ▪ Using Code Completion ▪ Debugging the Mobile Application ▪ Publishing the Mobile Application ▪ Generating a Signed APK.	1w	2

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3	Activities, Fragments, And Intents	a1,b1,c1,c2,d1	▪ Appling Styles and Themes to an Activity ▪ Hiding Activity Window ▪ Displaying a Dialog Window ▪ Displaying a Progress Dialog ▪ Linking Activities Using Intents. ▪ Adding Fragments Statistically and Dynamically ▪ Life Cycle of Fragments. ▪ Project Management Software ▪ Interaction Between Fragments. ▪ Understanding the Intent Objects ▪ Using Intent Filters	3w	6
4	User Interface	a2,b1,b2,c2,d1	▪ Understanding the Component of a Screen ▪ Adapting to Display Orientation ▪ Managing Changes to Screen Orientation. ▪ Utilizing the Action Bar. ▪ Creating the User Interface Programmatically ▪ Listening for UI Notification	2w	4
5	Designing the Interface With Views	a1,a2, ,b2,c2,d1	▪ Using Basic Views ▪ Using Picker Views ▪ Using List Views to Display Long Lists	2w	4

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			▪ Using Spinner View ▪ Understanding Specialized Fragment		
6	Data Persistence	b1,b2 c2,d1,d2	▪ Saving and Loading User Preferences ▪ Persisting Data to File ▪ Creating and Using Database.	3w	6
7	Networking	a1, b1,b2 c1, ,d1,d2	▪ Web Services Using HTTP ▪ JSON Services ▪ Client-server applications	2w	4
Number of Weeks /and Units Per Semester				14	28

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	▪ Install IDE ▪ Obtaining required tools ▪ Creating android virtual device ▪ Launching first application	1w	2	a1,a2,b1,c1,d1
2	▪ Exploring the IDE ▪ Create Simple application ▪ Generating a Signed APK.	1w	2	a1,a2,b1,c1,d1
3	▪ Linking Activities Using Intents. ▪ Adding Fragments Statistically and Dynamically ▪ Life Cycle of Fragments.	3w	6	a1,b1,c1,c2,d1
4	▪ Adapting to Display Orientation ▪ Managing Changes to Screen Orientation. ▪ Utilizing the Action Bar. ▪ Creating the User Interface	2w	4	a1,a2,b1,b2,c2,d1

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5	▪ Using Basic Views ▪ Using Picker Views ▪ Using List Views to Display Long Lists ▪ Using Spinner View ▪ Understanding Specialized Fragment	2w	4	a1,a2,b1,b2,c2,d1
6	▪ Saving and Loading User Preferences ▪ Persisting Data to File ▪ Creating and Using Database.	3w	6	a1, b1,b2 c2,d1,d2
7	▪ Web Services Using HTTP ▪ JSON Services Client-server applications	2w	4	a1, b1,b2 c2,d1,d2
Number of Weeks /and Units Per Semester		14	28	

V. Teaching strategies of the course:

Active lectures

Project

Interactive class discussions

Exercises and home works

Laboratory based session

Independent learning

Team work (group learning)

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VI. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Develop a calculator application for a simple mathematical operation	b1,c1,d1	2th	2.5
	Develop application to pass data between Three Fragments	b1,c2,d1,d2	5th	2.5
	Develop application to interact with SQLite database	b1,b2,c1,d1,d2	14th	5
2	Project	a1,a2,b1,b2,c1, c2,d1,d2	15th	10
Total				**20**

VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment Aligned Course Learning Outcomes
1	Assignment	2nd ,5th ,14th ,15th	20	20%
3	Midterm Exam(theoretical)	8th	10	20%
	Midterm Exam(practical)	8th	10	10%
	Final Exam(practical)	16th	10	10%
5	Final Exam(theoretical)	16th	50	50%
Total				100%

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VIII. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Boyer, R., 2018, Android 9 Development Cookbook: Over 100 recipes and solutions to solve the most common problems faced by Android developers. 3rd Edition, Packt Publishing
2. Ahmad Sahar, Craig Clayton, 2020, iOS 13 Programming for Beginners: Get started with building iOS apps with Swift 5 and Xcode 11, 4th ed, Packt Publishing

2- Essential References.

1. John Horton, 2018 ," Android Programming for Beginners: Build in-depth, full-featured Android 9 Pie apps starting from zero programming experience", 2nd Edition
2. DiMarzio, Jerome,2016,Beginning Android Programming with Android Studio. John Wiley & Sons,
3. Marco L. Napoli, 2019, Beginning Flutter: A Hands On Guide to App Development, 1st, Wrox.

3- Electronic Materials and Web Sites *etc*.

1. Android online API's
2. Apple's online iOS Dev Center

IX.   Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Computer and Information Technology apply. For the policy, see: -----------------------------------
The University Regulations on academic misconduct will be strictly enforced. Please refer to -----------

1	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic

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2	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	**Assignments & Project** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6	**Plagiarism:** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7	**Other policies:** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments my given directly to students using soft or hard copy

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Faculty of Computer & Information Technology

Department of Information System

Program of Information System

Course syllabus of Application Development

Course No   (...................)

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I. - Information about Faculty Member Responsible for the Course:

Name of Faculty Member		Office Hours					
		SAT	**SUN**	**MON**	**TUE**	**WED**	**THU**
Location& Telephone No.							
E-mail							

II. Course Identification and General Information:

1	Course Title:	**Application Development**				
2	Course Code & Number:					
3	Credit hours:		C.H			TOTAL
		Th.	Seminar	Pr	Tr.	
		2	-	2	-	*3*
4	Study level/ semester at which this course is offered:	3rd Level -1st Semester				
5	Pre –requisite (if any):	Database Fundamentals, Object-oriented Programming				
6	Co –requisite (if any):	None				
7	Program (s) in which the course is offered:	IS				
8	Language of teaching the course:	English/Arabic				
9	Study System	Term based system				
10	Mode of delivery:	Full Time				

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11	Location of teaching the course:	Faculty of Computer and Information Technology

III. Course Description:

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IV. Intended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop:

1. Demonstrate understanding of the engineering design cycle (discover- evaluate, design- evaluate, develop- evaluate, deliver- evaluate) and how it works as a practical problem-solving method
2. Describe different types of components used in mobile platforms.
3. Determine the requirements that will be used to design and develop the mobile applications.
4. Distinguish between the different required techniques that should be used during the process of developing mobile applications.
5. Develop mobile applications using the platform application programming interfaces.
6. Use different concepts and techniques during the development process of mobile applications.
7. Work effectively either individually or in groups to accomplish the assigned task.
8. Conduct in-class presentations including demonstration of application

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V. Course Content:

- Distribution of Semester Weekly Plan of Course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	**Getting Started** ▪ What's is mobile application? ▪ Compare Mobile devices vs. desktop devices. ▪ Architectures of mobile operating system ▪ Obtaining required tools ▪ Creating virtual device ▪ Launching first application	1st	2
2	Using IDE for application development ▪ Exploring the IDE ▪ Using Code Completion ▪ Debugging the Mobile Application ▪ Publishing the Mobile Application ▪ Generating a Signed APK.	2nd	2
3	Activities, Fragments, And Intents ▪ Appling Styles and Themes to an Activity ▪ Hiding Activity Window ▪ Displaying a Dialog Window ▪ Displaying a Progress Dialog ▪ Linking Activities Using Intents. ▪ Adding Fragments Statistically and Dynamically ▪ Life Cycle of Fragments. ▪ Project Management Software ▪ Interaction Between Fragments. ▪ Understanding the Intent Objects	3rd- 5th	6

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	Using Intent Filters			
4	User Interface ▪ Understanding the Component of a Screen ▪ Adapting to Display Orientation ▪ Managing Changes to Screen Orientation. ▪ Utilizing the Action Bar. ▪ Creating the User Interface Programmatically ▪ Listening for UI Notification	6th, 7th		4
5	Midterm Exam	8th	2	
6	Designing the Interface with Views ▪ Using Basic Views ▪ Using Picker Views ▪ Using List Views to Display Long Lists ▪ Using Spinner View ▪ Understanding Specialized Fragment	9th, 10th		4
7	Data Persistence ▪ Web Services Using HTTP ▪ JSON Services ▪ Client-server applications	11th -13th		6
8	▪ Web Services Using HTTP ▪ JSON Services ▪ Client-server applications	14th ,15th		4
9	Final Exam	16th	2	
Number of Weeks /and Units Per Semester			**16**	**32**

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Due Week	contact hours	Learning Outcomes
1	▪ Install IDE ▪ Obtaining required tools ▪ Creating android virtual device	1st	2	a1,a2,b1,c1,d1

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	▪ Launching first application			
2	▪ Exploring the IDE ▪ Create Simple application ▪ Generating a Signed APK.	2nd	2	a1,a2,b1,c1,d1
3	▪ Linking Activities Using Intents. ▪ Adding Fragments Statistically and Dynamically ▪ Life Cycle of Fragments.	3rd -5th	6	a1,b1,c1,c2,d1
4	▪ Adapting to Display Orientation ▪ Managing Changes to Screen Orientation. ▪ Utilizing the Action Bar. ▪ Creating the User Interface	6th ,7th	4	a1,a2,b1,b2,c2,d1
5	▪ Midterm Exam	8th	2	a1, a2, b1, b2,c1,c2
6	▪ Using Basic Views ▪ Using Picker Views ▪ Using List Views to Display Long Lists ▪ Using Spinner View ▪ Understanding Specialized Fragment	9th ,10th	4	a1,a2,b1,b2,c2,d1
7	▪ Saving and Loading User Preferences ▪ Persisting Data to File ▪ Creating and Using Database.	11th -13th	6	a1, b1,b2 c2,d1,d2
8	▪ Web Services Using HTTP ▪ JSON Services Client-server applications	14th ,15th	4	a1, b1,b2 c2,d1,d2
9	▪ Final Exam	16th	2	a1, a2, b1, b2,c1,c2
Number of Weeks /and Units Per Semester		16	32	

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VI. Teaching strategies of the course:

Active lectures
Project
Interactive class discussions
Exercises and home works
Laboratory based session
Independent learning
Team work (group learning)

VII.   Assignments:

No	Assignments	Week Due	Mark
1	Develop a calculator application for a simple mathematical operation	2th	2.5
2	Develop application to pass data between Three Fragments	5th	2.5
3	Develop application to interact with SQLite database	14th	5
4	Project	15th	10
			20

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VIII.   Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment Aligned Course Learning Outcomes
1	Assignment	2nd ,5th ,14th ,15th	20	20%
3	Midterm Exam(theoretical)	8th	10	20%
	Midterm Exam(practical)	8th	10	10%
	Final Exam(practical)	16th	10	10%
5	Final Exam(theoretical)	16th	50	50%
Total				100%

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

| | 1. Boyer, R. (2018). Android 9 Development Cookbook: Over 100 recipes and solutions to solve the most common problems faced by Android developers. 3rd Edition.
 2. Ahmad Sahar, Craig Clayton, 2020, iOS 13 Programming for Beginners: Get started with building iOS apps with Swift 5 and Xcode 11, 4th ed, Packt Publishing |

2- Essential References.

| | 1. John Horton, 2018 ," Android Programming for Beginners: Build in-depth, full-featured Android 9 Pie apps starting from zero programming experience", 2nd Edition |

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	2. DiMarzio, Jerome,2016,Beginning Android Programming with Android Studio. John Wiley & Sons, 3. Marco L. Napoli, 2019, Beginning Flutter: A Hands On Guide to App Development, 1st, Wrox.
3- Electronic Materials and Web Sites *etc*.	
	1. Android online API's 2. Apple's online iOS Dev Center

X. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Computer and Information Technology apply. For the policy, see: ----------------------------------

The University Regulations on academic misconduct will be strictly enforced. Please refer to **-----------**

1	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic
2	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	**Assignments & Project** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6	**Plagiarism:**

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	Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7	**Other policies:** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments my given directly to students using soft or hard copy

اللجنة الإشرافية

م.	الاســـم	الصـــــفة	التوقيع
١	أ.م.د. عبد الماجد الخليدي	نائب عميد الكلية للشؤون الأكاديمية	
٢	أ.م.د. احمد مجاهد	نائب عميد مركز التطوير الأكاديمي وضمان الجودة	
٣	د. حسين الأشول	ممثل المركز في الكلية	
٤	أ.د. إبراهيم المطاع	نائب رئيس الجامعة للشؤون الأكاديمية	

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