

MODULE VI

Unit Catego	Unit Code	Unit Name	Unit Duration (Hours)
CORE	0613 551 04 A	MOBILE APPLICATION DEVELOPMENT	270
BASIC	0031 541 01A	COMMUNICATION SKILLS	40
		Total	310

MOBILE APPLICATION DEVELOPMENT

ISCED UNIT CODE: 0613 551 04 A

TVET CDACC UNIT CODE: ICT/CU/SD/CR/03/6/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Develop Mobile Application

Duration of Unit: 270 Hours

Unit Description

This unit covers the competencies required to develop mobile application. It involves designing mobile application, writing mobile application source code, debugging mobile application, testing mobile application and publishing mobile application.

Summary of Learning Outcomes

Learning Outcomes	Duration (Hours)
1. Design Mobile Application	80
2. Write mobile application source code	110
3. Debug mobile application	40
4. Test mobile application	30
5. Publish mobile application	10
TOTAL	270

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Design Mobile Application	1.1. Design principles and Guidelines 1.1.1. Operating system 1.1.2. Consistency	● Practical Activities ● Project work ● Demonstration ● Group Work

	1.1.3. Device 1.1.4. Scalability 1.1.5. Simplicity 1.1.6. Mobile application design tools 1.1.6.1. Types of mobile application design tools e.g. Figma, Sketch, Adobe XD, InVision, Marvel 1.2. Mobile application functionality 1.2.1. Ease of Use (Usability) 1.2.2. Performance 1.2.3. Security 1.2.4. Compatibility 1.2.5. Offline Access 1.3. Mobile application interface 1.4. Mobile application output design	● Observation ● Third Party report ● Portfolio of Evidence ● Written tests
2. Write mobile application source code	2.1. Mobile application development tools 2.1.1. Integrated Development Environment (IDE) 2.1.2. Graphic User Interface (2.1.3. Emulator 2.1.4. Mobile SDK 2.2. Configure mobile application development environment 2.2.1. Android Studio 2.2.2. Xcode 2.2.3. Flutter 2.2.4. React Native 2.2.5. Visual Studio with Xamarin	● Practical Activities ● Project work ● Demonstration ● Group Work ● Observation ● Third Party report ● Portfolio of Evidence ● Written tests

	2.3. Mobile application interface 2.3.1. Setup 2.3.2. Develop 2.3.3. Test and Debug 2.3.4. Publish 2.4. Mobile application functionality 2.4.1. User Authentication 2.4.2. Navigation 2.4.3. Data Input and Management 2.4.4. Notifications and Alerts 2.4.5. Search Functionality 2.5. Integrate backend with frontend 2.5.1. Define API Endpoints 2.5.2. Set Up the Backend Server 2.5.3. Implement Database Models 2.5.4. Develop API Logic 2.5.5. Connect Frontend to API 2.5.6. Manage State in Frontend 2.5.7. Handle Error Responses 2.5.8. Test the Integration 2.6. Integrate Mobile application components with APIs 2.6.1. Define Component Requirements 2.6.2. Design API Endpoints 2.6.3. Implement API Calls in Components 2.6.4. Manage Component State 2.6.5. Handle Errors and Loading States 2.6.6. Data Binding	
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	2.6.7. Testing API Integration 2.6.8. Monitor API Performance 2.6.9. Iterate Based on Feedback 2.6.10. Documentation 2.7. Workplace safety and health practices 2.7.1. Observe health safety practices 2.8. Methods of e-waste storage and disposal 2.8.1. Recycling 2.8.2. Landfilling 2.8.3. Incineration 2.8.4. Refurbishing 2.8.5. Donation 2.8.6. Component Harvesting 2.8.7. Safe Storage 2.8.8. Exporting for Recycling 2.8.9. Electronic Waste Collection Events 2.8.10. Manufacturer Take-Back Programs 2.9. E-waste management is demonstration 2.9.1. Understanding E-waste 2.9.2. E-waste Collection Methods 2.9.3. E-waste Sorting and Processing 2.9.4. Recycling Techniques 2.9.5. Responsible Disposal Practices	
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3. Debug mobile application	3.1. Checking of mobile application source code 3.1.1. Error handling techniques 3.1.2. Source code revision 3.2. Debugging tools-bring from range 3.2.1. Integrated Development Environment (IDE) Debuggers 3.2.2. Print Statements 3.2.3. Profiling Tools 3.2.4. Memory Debuggers 3.2.5. Browser Developer Tools 3.2.6. Static Code Analysis Tools 3.2.7. Remote Debugging Tools 3.3. Regression testing 3.4. Prepare debugging report.	● Practical Activities ● Project work ● Demonstration ● Group Work ● Observation ● Third Party report ● Portfolio of Evidence - Written tests
4. Test mobile application	4.1. Mobile application testing 4.1.1. Unit test 4.1.2. Integration test 4.1.3. Usability test 4.1.4. System testing 4.1.5. Security test 4.1.6. Performance test 4.1.7. Compatibility test 4.2. Mobile application test plan 4.2.1. Test environmental 4.2.2. Test scope 4.2.3. Schedule 4.3. Mobile application testing tools 4.3.1. Performance testing tools 4.3.2. functional testing tools 4.3.3. security testing tools 4.3.4. Cross-browser testing 4.3.5. Mobile-web application	● Practical Activities ● Project work ● Demonstration ● Group Work ● Observation ● Third Party report ● Portfolio of Evidence - Written tests

	testing tools 4.3.6. Usability testing tools e.g. Google analytics 4.4. Test report preparation 4.4.1. Types of Test reports	
5. Publish mobile application	5.1. Identification of mobile publishing tools 5.1.1. Adobe InDesign 5.1.2. Canva 5.1.3. Lucidpress 5.1.4. Joomag 5.1.5. FlipHTML5 5.2. Generation of mobile application bundle 5.2.1. Android App Bundle (AAB) 5.2.2. Universal APK 5.2.3. iOS App Bundle (IPA) 5.2.4. Flutter App Bundle 5.2.5. React Native Bundle 5.2.6. Cordova/PhoneGap Bundle 5.3. Mobile application published 5.3.1. Application distribution through application stores	● Practical Activities ● Project work ● Demonstration ● Group Work ● Observation ● Third Party report ● Portfolio of Evidence - Written tests

Suggested Delivery Methods

- Instructor led facilitation using active learning strategies
- Demonstration by trainer
- Practical work by trainees
- Viewing of related videos
- Field Visits
- Group Work

- Role plays
- Group projects

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommend ed Ratio (Item: Trainee)
A	Learning Materials			
40.	Internet connection	✓ For each computer	1	1:1
41.	Flip charts	A1	1	1:25
42.	Textbooks	For reference	3	3:25
B	Learning Facilities & infrastructure			
43.	Computer Laboratory	To accommodate 25 Learners	1	1:25
44.	Theory Room	furnished with 25 Arm-chairs and a suitable trainer's table	1	1:25
C	Consumable materials			
45.	Printing papers	A4	2 Reams	1:12
46.	Toner / Ink bottles	For printers	2 pcs	1:12
47.	White board markers	Assorted colors	20	4:5
D	Tools and Equipment			
48.	Computers	✓ Genuine Windows/Linux ✓ Genuine Microsoft office Software ✓ Google Workspace Account ✓ Antivirus Software ✓ Suitable IDE	25	1:1
49.	External storage media	HDD / SSD / Flash	1	1:25
50.	Printer	Working printer	2	1:12
51.	1 Smart-board / Smart TV / Projector (with screen)	Where available	1	1:25
52.	Whiteboard/Chalkboard	4 X 8 Feet	1	1:25