

WEB APPLICATION DEVELOPMENT

ISCED UNIT CODE: 0613 451 10A

TVET CDACC UNIT CODE: ICT/CU/SD/CR/05/5/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Create Web Application

Duration of Unit: 250 Hours

UNIT DESCRIPTION

This unit covers the competencies required to create web application. It involves, designing web application, writing web application source code, testing web application, debugging web application and hosting web application

Summary of Learning Outcomes

Learning Outcomes	Duration (Hours)
1. To design web application	40
2. To write web application source code	100
3. To test web application	30
4. To debug web application	40
5. To host web application	40
TOTAL	250

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Design web application	1.1. Design Principles 1.1.1. User-centered Design 1.1.1.1. User's goals 1.1.1.2. User's tasks 1.1.1.3. Preferences 1.1.2. Information Architecture 1.1.3. Visual Design 1.1.3.1. Layout, 1.1.3.2. Typography, 1.1.3.3. Colour scheme, 1.1.3.4. Imagery. 1.1.4. Interaction Design 1.1.5. Accessibility 1.1.6. Web application design tools 1.1.6.1. Drafting application e.g Figma, illustrator or Photoshop basics 1.2. Designing of web application functionality 1.2.1. Creation of website application site map 1.2.2. Performance 1.3. Creation of web application interface design 1.3.1. Responsiveness of web pages 1.4. Designing of web application output 1.4.1. Rendering pdf, Excel documents	• Practical Activities • Project work • Demonstration • Group Work • Observation • Third Party report • Portfolio of Evidence • Written tests

2. Write web application source code	2.1. Creation of user interface development tools. 2.1.1. Identification of front-End development tools 2.1.1.1 Hypertext Markup Language 2.1.1.1.1. HTML Tags, elements and attributes 2.1.1.2 Cascading Style Sheets 2.1.1.2. Embedded CSS 2.1.1.3. Inline CSS 2.1.1.4. External 2.1.1.3 JavaScript basics 2.1.1.5. Data types operation 2.1.1.6. Document Object Model (DOM) 2.1.1.7. JavaScript Frameworks overview e.g JQuery syntax and events 2.2. Performing Version control 2.3. Functionality and interactivity development 2.4. Responsive design implementation Methodology 2.4.1. Screen resolutions 2.5. Front-end Development 2.5.1. Hypertext Markup Language 2.5.2. Cascading Style Sheets 2.5.3. JavaScript basics 2.5.4. JavaScript Frameworks overview 2.6. Application Programming Interfaces (API) 2.6.1. API integration	• Practical Activities • Project work • Demonstration • Group Work • Observation • Third Party report • Portfolio of Evidence • Written tests
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	2.6.2. Application API testing 2.7. Server-side coding tools 2.7.1. PHP coding basics 2.8. Back-end Development 2.8.1. Server-side coding tools e.g PHP coding basics 2.8.2. Back-end frameworks 2.9. Back-end database implementation 2.9.1. Database creation 2.9.2. Database connection 2.9.3. Database Manipulation through a web interface 2.10. Back-end API creation 2.11. Workplace safety and health practices 2.11.1. Applicable OSHA regulations and laws 2.12. E-waste storage and disposal 2.13. E-waste management	
3. Test web application	3.1. Web application testing Types 3.2. Web application test plan 3.2.1. Test environment 3.2.2. Test scope 3.2.3. Schedule 3.3. Web application testing tools 3.3.1. Performance testing tools 3.3.2. functional testing tools 3.3.3. security testing tools 3.3.4. Cross-browser testing 3.3.5. Mobile-web application testing tools 3.3.6. Usability testing tools e,g Google analytics	• Practical Activities • Project work • Demonstration • Group Work • Third Party report • Portfolio of Evidence • Written tests

	3.4. Test report preparation 3.4.1. Types of Test reports	
4. Debug web application	4.1. revise source code for errors i. Types of Errors 1. Logical 2. Runtime 3. Syntax b. Apply debugging tools; Error handling techniques i. Source code revision ii. Debugging tools c. Performing regression testing	• Practical Activities • Project work • Demonstration • Group Work • Observation • Third Party report • Portfolio of Evidence • Written tests
5. Host web application	a. Web hosting service identification i. Types of web hosting techniques e.g Shared, Dedicated, Free, Cloud. b. Domain acquisition and configuration i. Domain lookup ii. Domain Registration iii. Domain Pricing c. Web Server configuration i. Domain Configuration ii. DNS iii. Control panel d. Web application deployment tools i. FTP ii. GITs iii. Docker e. Web security measures	• Practical Activities • Project work • Demonstration • Group Work • Observation • Third Party report • Portfolio of Evidence • Written tests

	i. SSL / TLS Certificates ii. Firewalls iii. Updates and upgrades iv. Strong authentication v. Backup solutions	
	f. Web application maintenance and monitoring i. Server Maintenance ii. Database Maintenance iii. Application Updates iv. Monitoring tools 1. Performance monitoring 2. Up-time monitoring 3. Security monitoring 4. Log monitoring	

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
- Group projects

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	Learning Materials			
1.	Internet connection	✓ For each computer	1	1:1
2.	Flip charts	A1	1	1:25
3.	Textbooks	For reference	3	3:25
B	Learning Facilities & infrastructure			
4.	Computer Laboratory	To accommodate 25 Learners	1	1:25
5.	Theory Room	furnished with 25 Arm-chairs and a suitable trainer's table	1	1:25
C	Consumable materials			
6.	Printing papers	A4	2 Reams	1:12
7.	Toner / Ink bottles	For printers	2 pcs	1:12
8.	White board markers	Assorted colors	20	4:5
D	Tools and Equipment			
9.	Computers	✓ Genuine Windows/Linux ✓ Genuine Microsoft office Software ✓ Google Workspace Account ✓ Antivirus Software ✓ Suitable IDE	25	1:1
10.	External storage media	HDD / SSD / Flash	1	1:25
11.	Printer	Working printer	2	1:12
12.	1 Smart-board / Smart TV /	Where available	1	1:25

	Projector (with screen)			
13.	Whiteboard/Chalkboard	4 X 8 Feet	1	1:25