

# INFORMATION SYSTEMS

**UNIT CODE:** ICT/CU/CS/CR/06/6/B

## **Relationship to Occupational Standards**

This unit addresses the unit of competency: Develop an Information System

**Duration of Unit:** 150 hours

## **Unit Description**

This unit covers the competencies required to develop an information system. It involves understanding fundamentals of information systems, applying security measures to data, hardware, software in automated environment, understanding the software development process, demonstrating human computer interaction principles, understanding the VB.net programming environment and developing and testing a VB.NET application.

## **Summary of Learning Outcomes**

1. Understand fundamentals of Information Systems
2. Apply security measures to data, hardware, software in automated environment
3. Understand the Software Development Process
4. Demonstrate Human Computer Interaction Principles
5. Understand the VB.NET programming environment
6. Develop and test a VB.NET application

## **Learning Outcomes, Content and Suggested Assessment Methods**

<b>Learning Outcome</b>	<b>Content</b>	<b>Suggested Assessment Methods</b>
1. Understand fundamentals of Information Systems	<ul style="list-style-type: none"><li>• Information systems<ul style="list-style-type: none"><li>• Definition</li><li>• Components</li></ul></li><li>• Types of information systems<ul style="list-style-type: none"><li>• Transaction Processing Systems</li><li>• Management Information Systems</li><li>• Decision Support Systems</li><li>• Executive Information Systems</li><li>• Office Automation Systems</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Oral questioning</li><li>• Written tests</li><li>• Practical tests</li></ul>

	<ul style="list-style-type: none"> <li>• Emerging trends in information systems</li> <li>• Recommendation of information systems for different scenarios</li> <li>• Information system security <ul style="list-style-type: none"> <li>• Definition</li> <li>• Information security management system</li> <li>• Tools for information system security</li> <li>• Firewalls</li> <li>• Virtual private networks</li> </ul> </li> <li>• Mobile security <ul style="list-style-type: none"> <li>• Geolocation software</li> <li>• Remote data removal software</li> </ul> </li> <li>• Web security <ul style="list-style-type: none"> <li>• Cyber security</li> <li>• Technologies</li> <li>• Web threats</li> <li>• Defence strategies</li> </ul> </li> </ul>	
2. Apply security measures to data, hardware, software in automated environment	<ul style="list-style-type: none"> <li>• Data security and control</li> <li>• Security threats and control measures</li> <li>• Types of computer crimes</li> <li>• Detection and protection against computer crimes</li> <li>• Laws governing protection of ICT</li> </ul>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Project</li> <li>• Practical tests</li> </ul>
3. Understand the Software Development Process	<ul style="list-style-type: none"> <li>• Software Development Life Cycle</li> <li>• Software Development Methodologies <ul style="list-style-type: none"> <li>• Waterfall</li> <li>• Spiral</li> <li>• Rapid Application Development</li> <li>• Agile Development</li> </ul> </li> <li>• Modeling techniques <ul style="list-style-type: none"> <li>• Data Flow Diagrams</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Practical tests</li> </ul>

	<ul style="list-style-type: none"> <li>• Entity Relation Diagrams</li> <li>• UML diagrams</li> <li>• Creation of models for given scenarios</li> </ul>	
4. Demonstrate Human Computer Interaction Principles	<ul style="list-style-type: none"> <li>• Human Computer Interaction <ul style="list-style-type: none"> <li>• Definition</li> <li>• Role of interaction design</li> <li>• Interaction styles</li> <li>• Interaction elements</li> <li>• Mistakes in interaction design</li> </ul> </li> <li>• Interface design principles</li> <li>• Prescribing interaction choices and recognition of interaction flaws</li> </ul>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Oral questioning</li> <li>• Observation</li> <li>• Written tests</li> </ul>
5. Understand the VB.NET programming environment	<ul style="list-style-type: none"> <li>• The .Net framework <ul style="list-style-type: none"> <li>• Applications supported</li> <li>• Components of the .Net framework</li> </ul> </li> <li>• Installation of Visual Studio</li> <li>• Features of VB.Net</li> <li>• The Integrated Development Environment (IDE) <ul style="list-style-type: none"> <li>• Definition of IDE</li> <li>• Parts of VB.Net IDE</li> </ul> </li> <li>• VB.Net program structure <ul style="list-style-type: none"> <li>• VB.NET syntax</li> <li>• Namespace declaration</li> <li>• Class or module</li> <li>• Procedures</li> <li>• Data types, variables, constants</li> <li>• The Main procedure</li> <li>• Statements and Expressions (Variable declarations, operations, control statements)</li> <li>• Comments</li> </ul> </li> <li>• Creating a VB.Net project <ul style="list-style-type: none"> <li>• Saving Forms and Project</li> <li>• Compiling a Project</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Practical tests</li> <li>• Oral tests</li> <li>• Written tests</li> </ul>

<p>6. Develop and test a VB.NET application</p>	<ul style="list-style-type: none"> <li>• Basic VB.Net Controls <ul style="list-style-type: none"> <li>• Controls and their purpose</li> <li>• Standard naming conventions for controls</li> </ul> </li> <li>• Elements of a control <ul style="list-style-type: none"> <li>• Properties</li> <li>• Methods</li> <li>• Events</li> </ul> </li> <li>• Demonstrating Properties, Methods and Events <ul style="list-style-type: none"> <li>• Properties for basic controls</li> <li>• Setting properties at design time and run time</li> <li>• Methods for basic controls</li> <li>• Events for basic controls</li> </ul> </li> <li>• Demonstrating event handling <ul style="list-style-type: none"> <li>• Mouse events</li> <li>• Keyboard events</li> </ul> </li> <li>• Designing VB.NET form using HCI principles</li> <li>• Connection of VB.Net applications to a database <ul style="list-style-type: none"> <li>• ADO.Net object model</li> <li>• Demonstrating Database connection using the Data Provider</li> </ul> </li> <li>• Demonstrating creation of tables using Dataset components</li> <li>• Deployment of VB.NET VB.Net applications <ul style="list-style-type: none"> <li>• Purpose deployment</li> <li>• Demonstrating deployment steps</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Practical tests</li> <li>• Oral tests</li> <li>• Written tests</li> </ul>
---	---	--

#### **Suggested Methods of Instruction**

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;

- Supervised practical assignments and projects;
- Visiting expert from the ICT sector;
- Industrial visits

## **Recommended Resources**

### **Tools**

- Visual Studio, CASE software, UX/UI software

### **Equipment**

- Computer

### **Materials and supplies**

- Instructional materials
- Stationery

### **Reference materials**

- Trainer-recommended resources including web resources
- Visual Studio Documentation