



Republic of Rwanda  
Ministry of Education



RTB | RWANDA  
TVET BOARD

## INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

CCMCS402

Apply Computer Skills

Competence

RQF Level: 4

Learning Hours



Credits: 3

Sector: All

Trade: All

Module Type: Complementary Module

Curriculum: All

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Issue Date: May 2023

<b>Purpose statement</b>	This module describes knowledge skills and attitudes required to apply computer skills. At the end of this module, learners will be able to describe the operating system; Customize the computer features and protect the computer.				
<b>Delivery modality</b>	<b>Training delivery</b>	<b>100%</b>	<b>Assessment</b>	<b>Total 100%</b>	
	Theoretical content	30%	Formative assessment	30%	
	Practical work:	70%		100%	
	<ul style="list-style-type: none"> <li>Group Work and presentation</li> </ul>	20%			
	<ul style="list-style-type: none"> <li>Individual Work</li> </ul>	50%			
			Summative Assessment	N/A	

### Elements of Competency and Performance Criteria

<b>Elements of competency</b>	<b>Performance criteria</b>
<b>1. Describe the operating system</b>	<p><b>1.1</b> Operating system is properly described according to its activities</p> <p><b>1.2</b> Main Operating system components are properly described according to their services</p> <p><b>1.3</b> Operating system types are properly described according to the particular task</p> <p><b>1.4.</b> Operating system file system is properly described according to their types</p>
<b>2. Customize the computer features</b>	<p><b>2.1.</b> Customer requirements are properly identified for an operating system according to their needs</p> <p><b>2.2.</b> Minimum Hardware Requirements are properly identified for an operating system to be used</p> <p><b>2.3.</b> Operating system is properly customized according to the perspective steps</p>
<b>3. Protect</b>	<b>3.1.</b> Software utilities are properly installed according to the manufacturer

<b>computer system</b>	specifications
	<b>3.2.</b> Computer is regularly scanned according to the elimination of virus as per safety standards
	<b>3.3.</b> Computer data are accurate backed up and restored based on OS installation

## Course content

Learning outcomes	At the end of the module the learner will be able to:
	<ol style="list-style-type: none"><li>1. Describe the operating system</li><li>2. Customize the computer features</li><li>3. Protect computer system</li></ol>

Learning outcome 1: Describe the operating system	Learning hours: 15
Indicative content	
<ul style="list-style-type: none"><li>• <b>Description of operating system</b><ul style="list-style-type: none"><li>✓ Definition of operating system</li><li>✓ Features of operating system</li><li>✓ Functions of operating system<ul style="list-style-type: none"><li>⊕ Memory management</li><li>⊕ Processor management</li><li>⊕ Device management</li><li>⊕ File management</li><li>⊕ Security management</li><li>⊕ Coordination other software and users</li><li>⊕ Error detecting aids</li><li>⊕ Job accounting</li></ul></li></ul></li><li>• <b>Description of the main components of operating system</b><ul style="list-style-type: none"><li>✓ User interface<ul style="list-style-type: none"><li>⊕ Graphical user interface (<b>GUI</b>)</li><li>⊕ Command Line Interface (<b>CLI</b>)</li></ul></li><li>✓ Kernel<ul style="list-style-type: none"><li>⊕ Monolithic kernel</li></ul></li></ul></li></ul>	

<ul style="list-style-type: none"> <li>■ Microkernel <ul style="list-style-type: none"> <li>✓ File management system <ul style="list-style-type: none"> <li>■ Select group of Adjacent files or directories</li> <li>■ Select group of Non adjacent files or directories</li> <li>■ Duplicate files /folder</li> <li>■ Move /delete files and folders</li> <li>■ Downloading files/folders</li> </ul> </li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>● <b>Description of the types of operating system</b> <ul style="list-style-type: none"> <li>✓ Batch operating system</li> <li>✓ Distributed operating system</li> <li>✓ Real Time Operating System <ul style="list-style-type: none"> <li>■ Hard real time operating system</li> <li>■ Soft real time operating system</li> </ul> </li> <li>✓ Network operating system</li> <li>✓ Time –sharing operating system</li> <li>✓ Mobile operating system</li> <li>✓ Embedded operating system</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>● <b>Description of the operating system file system</b> <ul style="list-style-type: none"> <li>✓ File system role</li> <li>✓ Major types of file systems in Microsoft windows <ul style="list-style-type: none"> <li>■ File Allocation Table (FAT12, FAT16, FAT32)</li> <li>■ New Technology File System (NTFS)</li> </ul> </li> </ul> </li> </ul>	
<b>Resources required for the learning outcome</b>	
<b>Equipment</b>	<ul style="list-style-type: none"> <li>■ Computer</li> <li>■ Projector</li> <li>■ Whiteboard</li> </ul>
<b>Materials</b>	<ul style="list-style-type: none"> <li>■ Marker</li> <li>■ Flipchart</li> </ul>

<b>Tools</b>	<ul style="list-style-type: none"> <li>▪ CD</li> <li>▪ DVD</li> <li>▪ Flash driver</li> <li>▪ Reference books</li> </ul>
<b>Facilitation techniques</b>	<ul style="list-style-type: none"> <li>▪ Individual and group work</li> <li>▪ Individualized</li> <li>▪ Trainer guided</li> <li>▪ Group discussion</li> </ul>
<b>Formative assessment methods</b>	<ul style="list-style-type: none"> <li>▪ Written assessment</li> <li>▪ Oral presentation</li> <li>▪ Performance assessment</li> </ul>

<b>Learning outcome 2: Customize the computer features</b>	<b>Learning hours: 10</b>
<b>Indicative content</b>	
<ul style="list-style-type: none"> <li>• <b>Identification of the customer requirements for an operating system</b> <ul style="list-style-type: none"> <li>✓ Requirements to be considered <ul style="list-style-type: none"> <li>⊕ Budget constraints</li> <li>⊕ Compatibility with current hardware</li> <li>⊕ Compatibility with new hardware</li> <li>⊕ How the computers will be used?</li> <li>⊕ Compatibility with existing applications</li> <li>⊕ Types of new applications to be used</li> </ul> </li> </ul> </li> <li>• <b>Identification of the minimum hardware requirements for an operating system</b> <ul style="list-style-type: none"> <li>✓ Basic requirements for installing windows 10 on PC <ul style="list-style-type: none"> <li>⊕ RAM capacity:1Gigabyte (1GB) for 32-bits or 2 Gigabytes (2GB) for 64-bits</li> <li>⊕ Hard drive size:16 GB for 32-bits or 32 GB for 64-bits OS</li> <li>⊕ Graphics card: DirectX or later with WDDM 1.0 driver</li> <li>⊕ Processor: 1GHZ or faster processor or System on a Chip</li> </ul> </li> </ul> </li> </ul>	

- ⊕ Display: 800 x 600
- ✓ Common hardware upgrades
- **Customization of the operating system**
  - ✓ Windows settings
    - ⊕ Creating a user account
    - ⊕ Manage user account
    - ⊕ Window Personalization
  - ✓ Disk management
    - ⊕ Disk partitioning
    - ⊕ Disk formatting
    - ⊕ Disk clean up
  - ✓ Windows administrative tools
    - ⊕ Task scheduler
    - ⊕ Event viewer
  - ✓ Control panel settings

#### Resources required for the indicative content

<b>Equipment</b>	<ul style="list-style-type: none"> <li>▪ Computer</li> <li>▪ Projector</li> <li>▪ Whiteboard</li> </ul>
<b>Materials</b>	<ul style="list-style-type: none"> <li>▪ Marker</li> <li>▪ Flipchart</li> </ul>
<b>Tools</b>	<ul style="list-style-type: none"> <li>▪ CD</li> <li>▪ DVD</li> <li>▪ Flash Driver</li> <li>▪ Reference books</li> </ul>
<b>Facilitation techniques</b>	<ul style="list-style-type: none"> <li>▪ Demonstration and simulation</li> <li>▪ Individual and group work</li> <li>▪ Practical exercise</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Individualized</li> <li>▪ Trainer guided</li> <li>▪ Group discussion</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Formative assessment methods</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Written assessment</li> <li>▪ Oral presentation</li> <li>▪ Performance assessment</li> </ul>

Learning outcome 3: Protect computer system	Learning hours: 5
Indicative content	
<ul style="list-style-type: none"> <li>• <b>Installation of software utilities</b> <ul style="list-style-type: none"> <li>✓ Description of software tools \utilities           <ul style="list-style-type: none"> <li>⊕ Anti-virus</li> <li>⊕ Anti-malware</li> <li>⊕ Anti-spyware</li> <li>⊕ Backup software</li> <li>⊕ Backup media</li> </ul> </li> <li>✓ Installation of software tools\utilities           <ul style="list-style-type: none"> <li>⊕ Anti-virus</li> <li>⊕ Anti-malware</li> <li>⊕ Anti-spyware</li> </ul> </li> </ul> </li> <li>• <b>Scanning and Eliminating virus</b> <ul style="list-style-type: none"> <li>✓ Description of scan types</li> <li>✓ Description of scan mode</li> <li>✓ Virus elimination           <ul style="list-style-type: none"> <li>⊕ Elimination by neutralization</li> <li>⊕ Elimination by deleting</li> <li>⊕ Elimination by quarantine</li> </ul> </li> </ul> </li> </ul>	

- **Backing up and restoring of computer data**

- ✓ Description of backup types
  - ⊕ Full backup
  - ⊕ Differential backup
  - ⊕ Incremental backup
  - ⊕ Copy backup
  - ⊕ Mirror backup
  - ⊕ Daily backup
- ✓ Selection of common backup devices
  - ⊕ Tape drive
  - ⊕ Optical Discs
  - ⊕ USB flash drivers
  - ⊕ SD card
  - ⊕ HDD/SSD
- ✓ Selection of common restore devices
  - ⊕ HDD/SSD
  - ⊕ USB flash Drivers
  - ⊕ Tape drive
  - ⊕ SD Card and Optical drives

Resources Required For The Indicative Content	
<b>Equipment</b>	<ul style="list-style-type: none"> <li>▪ Computer</li> <li>▪ Projector</li> <li>▪ Whiteboard</li> </ul>
<b>Materials</b>	<ul style="list-style-type: none"> <li>▪ Markers</li> <li>▪ Flipchart</li> </ul>
<b>Tools</b>	<ul style="list-style-type: none"> <li>▪ USB/ Flash Driver</li> <li>▪ HDD</li> <li>▪ SD Card</li> </ul>

- Computer
- Projector
- Whiteboard

- Markers
- Flipchart

- USB/ Flash Driver
- HDD
- SD Card

	<ul style="list-style-type: none"> <li>▪ Tape drives</li> <li>▪ Reference books</li> </ul>
<b>Facilitation techniques</b>	<ul style="list-style-type: none"> <li>▪ Demonstration and simulation</li> <li>▪ Individual and group work</li> <li>▪ Practical exercise</li> <li>▪ Individualized</li> <li>▪ Trainer guided</li> <li>▪ Group discussion</li> </ul>
<b>Formative assessment methods</b>	<ul style="list-style-type: none"> <li>▪ Written assessment</li> <li>▪ Oral presentation</li> <li>▪ Performance assessment</li> </ul>

## References:

1. [https://www.tutorialspoint.com/operating\\_system/operating\\_system\\_tutorial.pdf](https://www.tutorialspoint.com/operating_system/operating_system_tutorial.pdf)
2. <https://www.cl.cam.ac.uk/teaching/1011/OpSystems/os1a-slides.pdf>
2. <https://www.ukessays.com/essays/computer-science/classification-of-operating-systems-ii-computer-science-essay.php>
3. <https://support.microsoft.com/en-us/windows/backup-and-restore-in-windows-352091d2-bb9d-3ea3-ed18-52ef2b88cbef>
4. <https://cce.sydney.edu.Sau/course/BCEI>
5. <https://www.techtarget.com/searchdatabackup/feature/Full-incremental-or-differential-How-to-choose-the-correct-backup-type>
6. <https://www.indeed.com/career-advice/career-development/types-of-operating-systems>
7. <https://www.langmeier-software.com/en/seiten/news/die-vor-und-nachteile-der-verschiedenen-windows-dateisysteme>