INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

COMMUNICATION
Communication has improved and evolved to facilitate our daily activities. In the 21st century, everything related to communication utilizes technology to 'send out' or disseminate information to a wider audience. Information can be 'sent out' in many ways. The inventions of cellular phones, television and other electronic devices are important in enhancing communication.

WHAT IS ICT?
ICT is the technology required for information processing, in particular, the use of electronic computers, communication devices and software applications to convert, store, protect, process, transmit and retrieve information from anywhere, anytime.

INFORMATION
Information refers to the knowledge obtained from reading, investigation, study or research. The tools to transmit information are the telephone, television and radio. Information is knowledge and helps us to fulfill our daily tasks. For example, forecasting the stock exchange market.

COMMUNICATION
Communication is an act of transmitting messages. It is a process whereby information is exchanged between individuals using symbols, signs or verbal interactions. Previously, people communicated through sign or symbols, performing drama and poetry. With the advent of technology, these 'older' forms of communication are less utilised as compared to the use of the Internet, e-mail, and video conferencing. Communication is important in order to gain knowledge. With knowledge, we are more confident in expressing our thoughts and ideas.

TECHNOLOGY
Technology is the use of scientific knowledge, experience and resources to create processes and products that fulfill human needs. Technology is vital in communication.

COMPUTER THREATS
Computer threats can come from many ways either from human or natural disasters. For example, when someone is stealing your account information from a trusted bank, this threat is considered as a human threat. However, when your computer is soaked in heavy rain, then that is a natural disaster threat.

MALICIOUS CODE
Malicious code is also known as a rogue program. It is a threat to computing assets by causing undesired effects in the programmer's part. The effect is caused by an agent, with the intention to cause damage. The agent for malicious code is the writer of the code, or any person who causes its distribution. There are various kinds of malicious code. They include virus, Trojan horse, logic door, trapdoor and backdoor, worm and many others.

a) VIRUS
· a program that can pass on the malicious code to other programs by modifying them
· attaches itself to the program, usually files with .doc, .xls and .exe extensions
· destroys or co-exists with the program
· can overtake the entire computing system and spread to other systems

b) TROJAN HORSE
· A program which can perform useful and unexpected action
· Must be installed by users or intruders before it can affect the system's assets
· An example of a Trojan horse is the login script that requests for users' login ID and password
· The information is then used for malicious Purposes.

c) LOGIC BOMB
· Logic bomb is a malicious code that goes off when a specific condition occurs.
· An example of a logic bomb is the time bomb
· It goes off and causes threats at a specified time or date

e) TRAPDOOR OR BACKDOOR
· A feature in a program that allows someone to access the program with special privileges

f) WORM
· A program that copies and spreads itself through a network

PRIMARY DIFFERENCES BETWEEN WORMS AND VIRUSES

Worms	Viruses
Operates through the network	Spreads through any medium
Spreads copies of itself as a Standalone program.	Spreads copies of itself as a program that attaches to other programs.

SECURITY MEASURES:
1. ANTIVIRUS
An antivirus program protects a computer against viruses by identifying and removing any computer viruses found in the computer memory, on storage media or incoming e-mail files. An antivirus program scans for programs that attempt to modify the boot program, the operating system and other programs that normally are read from but not modified. Examples: Norton Antivirus, Eset Antivirus, Kaspersky Antivirus,…

2. ANTI-SPYWARE
Spyware is a program placed on a computer without the user's knowledge. It secretly collects information about the user.
The spyware program communicates information to the outside source.
An anti-spyware application program sometime called tracking software or a spybot is used to remove spyware.

Among of the popular anti-spyware programs are:
• Spybot Search and Destroy
• Ad-aware
• Spyware Blaster

3. FIREWALL
Firewall is a piece of hardware or software which functions in a networked environment to prevent some communications forbidden by the security policy. Firewall implements a security policy. It might permit limited access from in or outside the network perimeters or from certain user or for certain activities.

MALICIOUS CODE THREATS VS. ANTIVIRUS AND ANTISPYWARE
Security threats include virus, Trojan horse, logic bomb, trapdoor and backdoor, and worm. Antivirus and anti-spyware can be used to protect the computer from the threats by:
- limiting connectivity
- allowing only authorised media for loading data and software
- enforcing mandatory access controls
- blocking the virus from the computer program.

SECURITY PROCEDURES
DATA PROTECTION
We need to protect the data in the computer as it may somehow get lost or corrupted due to some viruses or mishap like fire, flood, lightning, machine failures or even human errors.
There are a few ways to protect the information namely:
• make backup files
• detect the virus and clean the computer
• warn others on virus attacks

1) BACKUP FILES
Users can do backups of file systems by:
- keeping the duplicated files in external storage such as in the floppy disk and thumb drive
- do backup frequently

2) DETECT VIRUS AND DO CLEANUP
A computer virus is able to affect and infect the way the computer works. Viruses can be detected when we run an antivirus program. We can also delete the infected files and documents.

3) WARN OTHERS ON VIRUS ATTACK
We can warn others on virus attacks or new viruses by sending e-mails to them.

OPERATING SYSTEMS
1. Microsoft Windows (Win XP, Win 2000, Win 7, 8, 8.1, 10, 10.1)
2. Linux
3. Ubuntu (10, 12, 14, 16, 17)
4. Fedora
5. Macintoch (Mac)

SOFTWARE APPLICATIONS PACKAGES
1. Windows (Office; Word, PowerPoint, Excel, Access…)
2. Ubuntu (Libre Office)

COMPUTER

A computer is an electronic system that can be instructed to accept, process, store, and present data and information. It is made up of two component parts: hardware and software.

Hardware: The computer and its associated equipment.

Software: The general term for a set of instructions that controls a computer or a communications network.

Program: A set of instructions that directs a computer to perform certain tasks and produce certain results.

System: A set of components that interact to accomplish a purpose.

Data: Raw facts, figures, and details.

Information: An organised, meaningful, and useful interpretation of data.

Knowledge: An awareness and understanding of a set of information and how that information can be put to the best use.

Information System: A business information system designed to produce the information needed for successful management of a structured problem, process, department, or business.

Computers come in four sizes:

Microcomputers
Midrange computers
Mainframes
Supercomputers

• *Microcomputers:* A relatively compact type of computer, the most common of all, easily outsells all other types of computers annually for use in schools, business and at homes. There are five types of Microcomputers:
– Desktop Computers:
– Tower Systems
– Laptop Computer
– Notebook Computer:
– Palmtop computers:

*Desktop Computers***:** These are the type of microcomputers whose monitor is placed on top of the system's unit.

NETWORK:

Computer Networking refers to the techniques, physical connections, and programs used to interlink two or more computers together. This is fundamentally to enable the networked computers share resources such as hard discs, modems, printers.

TYPES OF NETWORK CONNECTION
There are two basic types of network connections:
• Physical connections and
• Logical or virtual connections
Physical connections that let computers directly transmit and receive signals. Physical connections are defined by the medium used to carry the signal, the geometric arrangement of the computers (topology), and the method used to share information.
Logical, or virtual, connections that allow computer applications, such as e-mail programs and the browsers used to explore the World Wide Web, to exchange information. Logical connections are created by network protocols and allow data sharing between applications on different types of computers, such as a personal computer (PC) running the Microsoft Corporation Windows operating system, in a network.

BASIC COMPONENTS OF A NETWORK
A classical computer network has three essential components or segments. They are as follows:
• Network Software.
• Application Software, &
• Network Hardware

NETWORKING DEVICES
i. Network Interface Cards
ii. Hubs
iii. Switches
iv. Routers
v. Modems
vi. Uninterruptible Power Supplies
vii. Wiring and Cable

Networks use three primary types of wiring (also referred to as "media"):
• **Twisted-pair: -** the industry standard in new installations. This wire comes in several "standards." Unshielded twisted pair (UTP)
• **Coaxial:-**resembles round cable TV wiring.
• **Fiber-optic:-**usually reserved for connections between **"*backbone*"** devices in larger networks, though in some very demanding environments, highly fault resistant fiber optic cable is used to connect desktop workstations to the network and to link adjacent buildings. Fiber-optic cable is the most reliable wiring but also the most expensive.

There are basically two types of computer networks namely:
1. Local Area Networks (LAN)
2. Wide Area Networks (WAN).
Other types of networks co-exist due to the combination of the LAN or WAN networks. Depending upon the size, computer networks are further classified Metropolitan Area Networks (MAN), Campus Area Networks (CAN) and Personal Area Networks (PAN). The topology

(topology is the way the computer networks and network resources are connected) of the networking can be classified as Bus Network, Ring Network and Star Network.

Local Area Networks speeds are much greater than Wide Area Networks
• There are other types of WAN – (MAN, PAN and CAN)
• A wireless network can be added to either a LAN or a WAN to reduce cabling
• Examples of wireless networking include Wi-Fi (Wireless Fidelity) and Bluetooth technology

Types of wireless communication networks
– Cellular Communication Service
– Wireless LAN (WLAN)
– Bluetooth Personal Area Network/Personal Area Network
– Wireless Data Networks

Types of Network: Wired and Wireless Network

SSID (Service Set IDentifier);
Official FUOYE Network SSID: *fuoyenet*

THE INTERNET:
The internet is the actual physical network. It is made up of wires, cables, and satellites.
Being connected to this network is often described as being Online. The Internet connects to over 100 million computers and resources worldwide. The internet has changed the world into a global village.

• The Internet is the world's largest network; the internet is made up of a community of end-users and providers. The Internet is used to Communicate, Retrieve, Research and E-Commerce

THE WEB:
The web also known as the World Wide Web (WWW) provides a multimedia interface to recourses available on the internet.
• Web sites are group of related pages and Web portals are designed to encourage you to visit them each time you are on the Web, to act as your home base, and to use as a gateway to their resources.
• Web utilities are specialized utility programs that make using the internet and the Web easier and safer.
• Browsers are programs designed to locate and display information on the World Wide Web by displaying both text and images within the page.

FEDERAL UNIVERSITY OYE EKITI Website: www.fuoye.edu.ng

UNIVERSITY PORTAL: This is the site where the main activities of students' registrations, courses and payment activities are done.
These site addresses are:
https://ecampus.fuoye.edu.ng

https://portal.fuoye.edu.ng
Each student is expected to visit these sites for information regularly.

EMAIL:
Login details: firstname.lastname.matricno@fuoye.edu.ng
Default Pwd: 'Fuoye123'

Accessing the Portal:
Username: Matric no. / Registration no.
Default Pwd: 'password'

For complain and support, please send an email to
support@fuoye.edu.ng **or** ict@fuoye.edu.ng