

Free Software (Open Source)

البرمجيات الحرة

Teacher: Adel MOUSSAOUI

Teaching Unit: UEM11

Credits: 2

Coefficient: 1

Course Objectives:

Familiarization with computer tools, the Internet and the free software.

Course Content:

- ▶ **Chapter 1: Information Technologies**

- ▶ 1.1. Definitions
- ▶ 1.2. Tools
 - ▶ Hardware
 - ▶ Software
- ▶ 1.3. Applications

- ▶ **Chapter 2: Open Source Tools**

- ▶ Introduction
- ▶ Development environment
- ▶ Office tools (LibreOffice suite).
- ▶ Collaboration
- ▶ Contributing to an open source project.

- ▶ **Assessment Method:**
Final exam (100%).

Chapter 1: Information Technologies

► 1.1. Definitions

- what “information technologies (IT)” means: the set of tools, systems, and methods that allow us to create, store, process, and share information (data).

Hardware (the physical part of IT)

- ▶ **Computers:** Different types like **desktops** (for offices), **laptops** (portable), **servers** (powerful computers to manage data and services), and **workstations** (high-performance machines for design, research, etc.).
- ▶ **Communication networks:** Devices that make computers “talk” to each other. Example: **routers** (direct traffic), **switches** (connect many computers in a network), **modems** (internet connection), **fiber optics** (very fast cables), and **Wi-Fi** (wireless).
- ▶ **Peripherals:** External devices connected to computers, like **printers** (to print), **scanners** (to digitize paper), **keyboards/mice** (to interact), **cameras** (for video), **sensors** (to capture physical data like temperature or motion).
- ▶ **Mobile devices:** **Smartphones**, **tablets**, **PDAs** (older handheld organizers). These make computing portable.
- ▶ **Smart chips:** Small intelligent devices built inside objects. Examples: **RFID** (tags for identification), **NFC** (tap-and-pay with phones), **embedded processors** (inside washing machines or cars.....), **IoT sensors** (collect and share data online).

Software (the logical part of IT)

- ▶ **Operating systems:** The base software that controls a computer (Windows, Linux, macOS, Android, iOS,...).
- ▶ **Business applications:** Specialized programs for organizations, like **ERP** (planning company resources), **CRM** (managing customer relations), **HR** (employee management), **accounting software**, etc.
- ▶ **Office software:** Everyday tools like **Word** (documents), **Excel** (spreadsheets), **PowerPoint** (presentations), and collaboration platforms like **Google Workspace** or **Microsoft 365**.

1.3. Applications

- ▶ **Communication spaces:**
 - ▶ **Internet:** the global network.
 - ▶ **Intranet:** private network inside a company.
 - ▶ **Extranet:** semi-private network, shared between a company and partners (e.g., suppliers).
- ▶ **Multimedia:** Tools for online communication like **audio conferencing** (voice meetings online) and **video conferencing** (Zoom, Teams).
- ▶ **Electronic Data Interchange (EDI):** **Automated transfer** of structured data (e.g., invoices, orders) between businesses.
- ▶ **Workflows:** Automated processes to manage tasks, approvals, or documents inside organizations.

Chapter 2: Open Source Tools

- ▶ Chapter 2: Open Source Tools
- ▶ **Introduction:** History of open source (software whose source code is open and **free to use, modify, and share**). Advantages (free, customizable, community support) vs disadvantages (sometimes less user-friendly, less official support). Licensing explains the rules of use (GPL, MIT license, etc.).
- ▶ **Development environment:**
 - ▶ **Linux** (popular open source operating system).
 - ▶ **code editors** (tools where you write programs, like VS Code, Vim).
- ▶ **Office tools:** **LibreOffice** suite (Writer for documents, Calc for spreadsheets, Impress for presentations).
- ▶ **Collaboration:** Open-source platforms for file storage and sharing (e.g., Nextcloud, ownCloud, **GitHub** for code).
- ▶ **Contributing to a project:** **How to participate in an open source project**—reporting bugs, writing code, documentation, or translations.