SYLLABUS

Course: Electronics and System Components

Domain: Mathematics and Computer Science
Field: Computer Science

Speciality: Computer Science

Semester: 1 Year: 2024-2025

Identification of the teaching course

Title: Electronics and System Components

Teaching Unit: Discovery

Number of credits: 4 Coefficient: 2

Total weekly hours.:

- Course (Online): 1h30 per section
- Tutorials: 1h30 per group
- Practical work : /

Course Instructors

Dr. Hariri Walid, Associate professor,
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Dr. Hamadache Billel, Associate professor, bilelhamadache@gmail.com

Course time and location: Saturday: 14:00 p.m. - 15:25 p.m. (Section B) and Saturday: 15:30 p.m. - 16:55 p.m. (Section A & C).

Description of the teaching course

Prerequisites: General knowledge of computer components

General Objective of the Course:

This course provides a comprehensive introduction to the field of computer components, their architectures, and their modes of operation. Several fundamental concepts are presented and explained in detail, accompanied by numerous examples and illustrative diagrams. After completing this course, students are expected to have a holistic understanding of computers and their hardware and software components, enabling them to make informed choices based on their needs and performance requirements. The first chapter delves into the history of computing from the 1945s, presenting the technologies adopted up to the present day. The second chapter provides an overview of the various computer components, along with their characteristics and uses. Subsequently, chapters 3 to 7 offer detailed examinations of the basic computer components, including the motherboard, processor, memory, graphics card, and hard drive, respectively. Chapters 7 and 8 focus on computer connectivity and various Input/Output devices, while also introducing the different connection ports for these devices. The final chapters provide an introduction to operating systems and computer networks.

Learning Objectives:

- Study the history of computing and the different types of computers.
- Introduce the student to the various hardware and software components of a computer.
- Examine each hardware component separately (motherboard, processor, memory, etc.).
- Demonstrate the relationship between the studied elements (hardware, software).
- Explain computer performance metrics based on its basic components.
- Introduce students to operating systems and computer networks.
- Using tutorial sessions, enable students to solve calculation and comparison exercises.

Course content

Chapter 1 provides general information and definitions about computers while discussing the key milestones in the history of computing from 1945 to the present day.

Chapter 2 presents the different forms of computers, their characteristics, and uses.

Chapter 3: is divided into 5 parts according to the component to be studied:

- ***Part1*** is dedicated to the study of the motherboard, including its various formats, features, and components.
- ***Part2*** is specifically focused on the study of the processor, which is the most important component on the motherboard. It covers the history of processors and their components, as well as different types of instructions and their encoding.
- ***Part3*** provides an in-depth study of the various types of memory found in a computer, their technology, and usage.
- ***Part4*** introduces the graphics card, which is responsible for display in the computer.
- ***Part5*** is dedicated to the hard drive, which is the primary storage memory of the computer. It covers types, components, and features, and includes several exercises for practice.

Chapter 4 explores the different types of input/output devices of a computer.

Chapter 5 discusses computer connectivity, highlighting the various ports used for this purpose.

Chapter 6 provides a general overview of operating systems, their roles, and services.

Chapter 7 and 8 study computer networks in general and wireless networks, respectively.

Control	Weighting in %
Final exam	**60%**
Micro-Assessment	
Tutorials	**40%**
Practical work	
Personal project	
Group work	
Fields trips	
Attendance (presence / absence)	
Other	
Total	**100%**

References & Bibliography

Textbook (Main references) :		
Title	**Author**	**Editor and publication year**
Electronique. Composants et systèmes d'application	T. Floyd	Editions Dunod, 2000.
Introduction aux systèmes informatiques Architectures, composants, prise en main	Jacques Lonchamp	Collection Info Sup, Dunod. 2017
Support references		
Introduction to Electronics: A Basic Approach	Peter Basis	Pearson, 2014.
Wireless networking	Kumar, Anurag, D. Manjunath, and Joy Kuri	Elsevier, 2008.
Introduction to Microprocessor Based Systems Using the ARM Processor	Kris Schindler	2nd edition, Pearson Learning Solutions (December 2012)

Course Schedule

Week	Course Title	Date
1	Syllabus	September
2	General information about computers	October
3	Elements of a computer	

4	• Electronic components of a computer: The motherboard • TD N°1	
5	• Microprocessor • TD N°2	
6	• Memory • TD N°3	
7	Graphics card	
8	• Hard disk drive • TD N°4	
9	**Micro assessment N° 1**	
10	The different types of peripherals	
11	Computer Connections	
12	Operating systems	
13	Introduction to Networks	
14	• Wireless network • TD N°5	
	Final exam	
	Retake exam	