

SYLLABUS

Domaine : SCIENCES AND TECHNOLOGY Sciences and technology 1ST YEAR

Semester : first semester

2024/2025

Identification of the teaching subject

Course : physics 1

Teaching unit: UEF11

Credit: 4

Coefficient : 2

Teaching mode: online

Lessons (hours per week): 1:30

• **Tutorial (hours per week):** 1:30

• **Practical work (hours per week):** 1:30

Lecturers

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Description of teaching subject

We will be teaching your College Physics 1 this year. we have put a lot of thoughts into choosing the best materials and resources to help you succeed, and we want to tell you about them so you can be prepared when courses starts. In this document, you will find general information about the course (e.g., course description and additional resources, schedule of topics covered, course requirements and assignments, and course evaluation). Please read carefully over it.

Course description:

This cours has been specifically designed for first-year students in the common core of Computer sciences and automatic.

College Physics 1 is an introduction to mechanics. It includes dimensional Analysis and Vector Calculus, Point Kinematics , Dynamics, work and energy,

Goals:

The main goals of the course are to:

- ✓ Increase students' understanding of natural laws in mechanics,
- ✓ Develop students' curiosity about physical phenomena
- ✓ Enhance students' problem solving and critical thinking skills
- ✓ Enhance students' language proficiency in the domain (e.g., use of scientific discourse, writing of lab reports, etc)
- ✓ Increase students' ability to connect physical concepts, principles, and laws to the solution of real world problems.

Table of Contents

Chapter 0 : Mathematical reminders:

- 1- Equation for dimensions.
- 2- Reminder on vectors

II. Chapter I : Kinematics :

- 1- Position vector in coordinate systems (Cartesian, cylindrical, etc.) - law of motion - Trajectory.
- 2- Velocity and acceleration in coordinate systems.
- 3- Applications: Movement of a material point in different coordinate systems.
- 4- Relative motion.

III. Chapter II. Dynamics :

- 1- Generalities : Mass - Force - Moment of force – Absolute and Gallilien reference frame
- 2- Newton's laws
- 3- Principle of conservation of momentum.
- 4- Differential equation of motion
- 5- Kinetic momentum
- 6- Applications of the fundamental law for forces (constant, time-dependent, velocity-dependent, central force, etc.).

IV. Chapter III. Work and energy :

- 1- Work of a force
- 2- Kinetic energy
- 3- Potential energy – Examples of potential energy (gravity, gravitational, elastic)
- 4- Conservative and non-conservative forces – Total energy theorem

