

Faculty of Medicine



MD1102

Physique expérimentale et introduction mathématique aux sciences expérimentales (1e partie)

[60h+21h exercices] 8 credits

Teacher(s): Bernard Mahieu
Language: French
Level: First cycle

Aims

Physics is considered as an experimental science based on the precise observation of reality and the collection of data whose interpretation is based on assumptions to be confirmed experimentally. The objective of this course is twofold. On the one hand, to instil into the students a good scientific approach and reasoning and on the other hand, to give to the students the elements necessary for a good understanding of the scientific matters the student will be confronted with later on. The course refers to many applications in medicine and biology.

Main themes

In this first part, the course starts with some revisions of mathematics and elements of statistics. Then the following topics are treated : mechanics of the particle, mechanics of solids and fluids, periodic phenomena, thermal physics

Content and teaching methods

Mathematics

- functions of one and two variables
- calculus (derivation, differentiation and integration)
- vectors
- elements of statistics.

Mechanics of the particles and solids

- images and information
- scanner
- tomodensimetry
- nuclear magnetic resonant
- echography.

Mechanics of fluids

- hydrostatics (pressure, surface tension,#)
- hydrodynamics

Periodic phenomena

- harmonic motion
- waves

Thermal physics

- gas
- dilatation
- calorimetry
- thermodynamics

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisite : Notions of calculus (the students are assumed to know about derivation and integration).

Evaluation : written exam.

Support : syllabus, slides, software, I Campus, tutorials (labs and problems to group of 20 students)

Other credits in programs

FARM11BA	Première année de bachelier en sciences pharmaceutiques	(8 credits)	Mandatory
SBIM11BA	Première année de bachelier en sciences biomédicales	(8 credits)	Mandatory