

## Faculty of Medicine



MD1001

## Experimental physics and mathematical introduction to experimental sciences (1st part)

[60h+18.5h exercises] 8 credits

**Teacher(s):** Bernard Piraux  
**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**

<b>DENT11BA</b>	Première année de bachelier en sciences dentaires	(8 credits)	Mandatory
<b>MED11BA</b>	Première année de bachelier en médecine	(8 credits)	Mandatory