Physique 2

Lecturers
Michel TYTGAT (Coordinator) and Michele SFERRAZZA

Course mnemonic
PHYS-F205

ECTS credits
5 credits

Language(s) of instruction
French

Course period
First term

Course content

Electrostatics : electric charge, electric force, electric field (Gauss law); electric potential, capacity. Direct current : generators, resistance. Magnetism: Magnets and magnetic field, electro-dynamic (Ampere's law), magnetic force. Magnetic induction: electromotive force of induction (Faraday's law, Lenz law), generators, auto-induction. For the students in biology and geology: Radiative energy (nature of the light, electromagnetic spectrum and photon energy). Circuits: circuits laws (Kirchhoff laws). Alternating current and electronics: RLC circuits, introduction to the semi-conductors.

Objectives (and/or specific learning outcomes)

To give a basic knowledge in electromagnetism with special emphasis on concepts and applications used in biology and in Earth sciences. The formalism, though limited, has nevertheless the rigor required by the subject. The matter is presented in the context of the modern physics.

Pre-requisits and co-requisits

Pre-requisites courses

MATH-F112 | Mathématiques 1 | 10 crédits, PHYS-F104 | Physique 1 | 10 crédits and PHYS-F104 | Physique 1 | 5 crédits

Co-requisites courses

MATH-F112 | Mathématiques 1 | 10 crédits

Courses having this one as pre-requisit

BIOL-F321 | Spécificités du développement végétal | 5 crédits , BIOL-F324 | Physique bioinspirée | 5 crédits, ELEC-H201 | Electricité et électronique | 5 crédits, MATH-F3141 | Analyse numérique pour les équations aux dérivées partielles | 5 crédits and MECA-H301 | Systèmes énergétiques : principes de bases et technologies durables | 5 crédits

Course having this one as co-requisit

GEOL-F309 | Géophysique et tectonophysique | 5 crédits

Teaching method and learning activities

Theory: 12 lectures of 2 hours. Exercises: 6 sessions of 2 hours. Practicals: 8 sessions of 3 hours.

References, bibliography and recommended reading

E. Hecht "Physique". De Boeck Université.

Other information

Contact(s)

VUB - Campus Plaine - Bâtiment G - local 0G137 Tél. : 02/629.38.98 - Secrétariat : 02/629.32.02 Mail : Pascal.Vanlaer@ulb.ac.be page WEB : http://w3.iihe.ac.be/~pvanlaer

Evaluation method(s)

Other

Evaluation method(s) (additional information)

Written examination : Theory (without books) 8 marks/20; exercises (open book) 8 marks/20; Practicals: 4 marks/20.

Programmes

Programmes proposing this course at the faculty of Sciences

BA-BIOL | Bachelor in Biology | option Bruxelles/unit 2, BA-GEOG | Bachelor in Geography : General | unit 2 and unit 3 and BA-GEOL | Bachelor in Geology | unit 2