
COURSE: Physics mod. 2

ACADEMIC YEAR: **2017-2018**

TYPE OF EDUCATIONAL ACTIVITY: Affine

TEACHER: Francesco Fabozzi

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mobile (optional): 3401483191

Language: Italian

ECTS: 6 (6 lessons e 0
tutorials/practice)

n. of hours: 48 (48 lessons
e 0 tutorials/practice)

Campus: **Potenza**
Dept./School: **Dipartimento di
Scienze**
Program: **Geology**

Semester: **2**
**from 05/03/2018 to
15-30 june 2018**

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The students

- *will learn the fundamental laws of electric and magnetic phenomena.*
- *will be able to describe the laws of electromagnetism by means of an adequate mathematical formalism.*
- *will be able to solve numerical problems on the topics presented in the lectures.*

PRE-REQUIREMENTS

Notions provided in mod. 1 of the course

SYLLABUS

Electrostatic laws (12 hours)

Electric charge. Electric interactions. Electrostatic field and its properties. Electric potential.

Conductors, capacitors, dielectrics (6 hours)

Electrostatic properties of conductors. Capacitors. Electrostatic in presence of dielectrics.

Electric current (6 hours)

Electrical conduction. Ohm's law. Electromotive force. Electric circuits.

Magnetic fields (10 hours)

Lorentz's force. Magnetic fields due to a current. Properties of magnetic fields. Force between current-carrying conductors. Magnetic properties of matter.

Electromagnetic induction (6 hours)

Electromagnetic induction. Induced electric fields. Displacement current. Self-induction. Alternating currents.

Electromagnetic waves (8 hours)

Maxwell's equations. Introduction to waves propagation. Planar electromagnetic waves. Energy transport and the Poynting vector. The spectrum of electromagnetic waves.

TEACHING METHODS

Theoretical lectures.

EVALUATION METHODS

The evaluation of the student on the mod. 2 is part of the evaluation on the full Physics course.

Pre-selective Written examination followed by Oral examination.

Only students reporting at least 18/30 in the Written examination are admitted to the Oral examination.

The final score for the Physics course evaluation is determined by the mathematical average of the scores obtained for the mod. 1 and mod. 2 evaluations.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Primary textbook:

*Mazzoldi, Nigro, Voci
Elementi di Fisica – Elettromagnetismo
Publisher: Edises*

Suggested supplementary textbook:

*Halliday, Resnick, Walker
Fondamenti di Fisica: Elettrologia, magnetismo, ottica
Publisher: CEA*

INTERACTION WITH STUDENTS

The teacher receives students on Friday at 11:00-12:00, in his study

Students can contact the teacher by e-mail to make an appointment or to ask for informations related to the course.

EXAMINATION SESSIONS (FORECAST)¹

12/01/2018, 09/02/2018, 29/06/2018, 13/07/2018, 07/09/2018, 05/10/2018, 09/11/2018

SEMINARS BY EXTERNAL EXPERTS YES ☐ NO ☒

FURTHER INFORMATION

¹Subject to possible changes: check the web site of the Teacher or the Department/School for updates.