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**COURSE:** Physics mod. 2

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**ACADEMIC YEAR:** 2018-2019

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**TYPE OF EDUCATIONAL ACTIVITY:** Affine

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**TEACHER:** Francesco Fabozzi

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e-mail: francesco.fabozzi@unibas.it

website: scienze.unibas.it/site/home.html

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phone: 0971206166

mobile (optional): 3401483191

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Language: Italian

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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 01.03.2019 to  
31 May-20 June  
2019

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**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.*
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**PRE-REQUIREMENTS***Notions provided in mod. 1 of the course*

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**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.*

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**TEACHING METHODS****Theoretical lectures.**

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**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.

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**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*

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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.*

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EXAMINATION SESSIONS (FORECAST)<sup>1</sup>

11/01/2019, 08/02/2019, 01/03/2019, 28/06/2019, 12/07/2019, 06/09/2019, 04/10/2019, 06/12/2019

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SEMINARS BY EXTERNAL EXPERTS    YES     NO

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FURTHER INFORMATION

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