

COURSE: <b>Physics mod. 2</b>			
ACADEMIC YEAR: <b>2016-2017</b>			
TYPE OF EDUCATIONAL ACTIVITY: <b>Basic</b>			
TEACHER: <b>Prof. Francesco Fabozzi</b>			
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phone: <b>0971206166</b>		mobile (optional):	
Language: <b>ITALIAN</b>			
ECTS: <b>8</b> (lessons)	n. of hours: <b>64</b> (lessons)	Campus: <b>Potenza</b> Dept./School: <b>Dept. Of Sciences</b> Program: <b>Chemistry (L27)</b>	Semester: <b>II</b>

## 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 lessons.**

## 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

## LOGO DELLA STRUTTURA PRIMARIA

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*The teacher receives students by appointment.*

*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>

13/01/2017, 23/06/17, 14/07/2017, 08/09/2017, 06/10/2017, 10/11/2017

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SEMINARS BY EXTERNAL EXPERTS    YES     NO X

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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.