Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Physics II: Electromagnetism			
ACADEMIC YEAR: 2018/19			
TYPE OF EDUCATIONAL ACTIVITY: Basic			
TEACHER: dr Francesco Esposito			
e-mail: francesco.esposito@unibas.it		web: http://oldwww.unibas.it/utenti/esposito/home.html	
Phone: 0971 205164		mobile (optional):	
Language: Italian			
ECTS: 6	n. of hours: 60	Campus: Potenza School of Engineering	Semester: First

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Obtain a comprehensive understanding of the fundamental concepts in electricity and magnetism. Obtain analytical skills for solving problems in Electricity and Magnetism.

PRE-REQUIREMENTS

Knowledge of mechanics, mathematical analysis

SYLLABUS

Electrostatics, Magnetostatics, Maxwell equations, Electromagnetic waves.

DETAILED CONTENT:

Electric charge and structure of matter. Point charges and continuous charge distributions. Coulomb force, electric field, electric potential, Gauss's law. Electrical properties of matter: Conductors and insulators, electrical capacity, the electric field in the conductors and dielectrics. Energy associated with the electric field. Electrical resistance, conduction in metals and Ohm's law. Kirckoff's laws. RC circuits. Magnetic field, Lorentz force and the dynamics of electric charges under the action of electromagnetic fields: motion on circular paths, Hall effect. Circulation of the magnetic field, Ampere's law, the solenoid. Energy associated with the magnetic field and electromagnetic field energy. Faraday's law and the phenomena of magnetic induction, inductance and self inductance. RL circuits. RLC circuits. Overview of magnetic properties of matter. Maxwell's equations and electromagnetic waves.

TEACHING METHODS

Theoretical lessons

EVALUATION METHODS

Written and oral examination
Intermediate verifications

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Gettys, Keller, Skove: Fisica 2. McGraw-Hill
http://oldwww.unibas.it/utenti/esposito/home.html

INTERACTION WITH STUDENTS

Professor's office hour: every day after appointment by e-mail[1]

EXAMINATION SESSIONS (FORECAST)[1]

18/2/2019, 6/5/2019, 8/7/2019, 16/9/2019, 9/12/2019

SEMINARS BY EXTERNAL EXPERTS YES □ NO ☒

FURTHER INFORMATION

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