

COMMUNICATION ENGINEERING AND ELECTRONIC TECHNOLOGIES

(Lecce - Università degli Studi)

Teaching APPLIED ELECTROMAGNETICS

GenCod A006430

Owner professor Luciano TARRICONE

Reference professors for teaching
GIUSEPPINA MONTI, Luciano TARRICONE

Teaching in italian APPLIED ELECTROMAGNETICS

Teaching APPLIED ELECTROMAGNETICS **Language** INGLESE

Course year 2

SSD code ING-INF/02

Curriculum Telecom Applications

Reference course COMMUNICATION ENGINEERING AND ELECTRONIC

Course type Laurea Magistrale

Location Lecce

Credits 9.0

Semester Primo-Semestre

Teaching hours Ore-Attività-frontale: 81.0

Exam type Orale

For enrolled in 2022/2023

Assessment Voto-Finale

Taught in 2023/2024

Course timetable

<https://easyroom.unisalento.it/Orario>

BRIEF COURSE DESCRIPTION

Il corso propone alcuni esempi di applicazioni scientifiche e industriali dell'Elettromagnetismo, con particolare riferimento al BioElettromagnetismo, alle applicazioni biomediche e ai sistemi wireless intelligenti

REQUIREMENTS

Conoscenze approfondite di Campi Elettromagnetici e Microonde

COURSE AIMS

Il corso intende formare nello studente una spiccata capacità di applicare le conoscenze teoriche dell'Elettromagnetismo e delle Microonde a casi reali

TEACHING METHODOLOGY

Lezioni frontali, esercitazioni per la soluzione di problemi pratici, esercitazioni al calcolatore, esercitazioni in laboratorio, seminari

ASSESSMENT TYPE

Sviluppo e realizzazione di un progetto pratico (verificare la capacità di risolvere problemi pratici) e prova orale (verificare la capacità di analisi, critica, ed esposizione degli argomenti)

FULL SYLLABUS

Please see the reference notes in the section related to the reference books/material to identify the materials to be studied for each part of the course's program.

- Introduction to the course [1]: Chapter 3, 4 and 5
- Introduction to EMC [1]: Chapter 1
- BioEM

[2]: Chapter 1, 2, 3 and 4

[3]: Introduction, Chapter 1, 8 and 9

Professor's notes on EM Exposure Safety Standards and Laws

Three Professor's papers on BEM modelling

Professor's notes on numerical dosimetry

Professor's notes on classification of EM sources

Professor's notes on ELF fields emitted by Power lines and their reduction

[1], [4], Selected papers by (i) Hodgkin and Huxley, (ii) Colquhoun and Hawkes

- Wireless Systems and EM enabling technologies

Professor's notes on Radiopropagation

Professor's notes on RFID

Professor's notes on new materials and technologies

[5]: Chapter 6

One Professor's paper on the convergence of EM Technologies towards IOT [6], [7]

- Radar Systems for meteorology

Professor's notes [8], [9]

- Shielding and Measurement Environments

[1]: Chapter 11

[11]: Chapter 5 and 6 [10], [11]

- Measurement Techniques and Instrumentations

Professor's notes

REFERENCE TEXT BOOKS

Books:

[1] C. Paul, Electromagnetic Compatibility (EMC)

[2] J. Malmivuo, R. Plomsey, Bioelectromagnetics (BEM)

[3] C. Polk, E. Postow, CRC Handbook of Biological Effects of EM Fields

[4] B. Hille, Ionic Channels of Excitable Membranes

[5] L. Tarricone, A. Esposito, Grid Computing for EM

[6] T. Rappaport, Wireless Communications

[7] K. Finkenzeller, D. Muller, RFID Handbook

[8] M. A. Richard, J. Scheer and W. Holm, Principles of Modern Radar

[9] R. J. Doviak, D. S. Zrnic, Doppler Radar and Weather Observations

[10] L. H. Hemming, EM Anechoic Chambers

[11] V. P. Kodali, Engineering EMC