



Course Code ECE-543	Course Title Electromagnetic Compatibility/ Electromagnetic Interference	ECTS Credits 8
Department Engineering	Semester Fall or Spring	Prerequisites ECE-342
Type of Course Elective	Field Engineering	Language of Instruction English
Level of Course 2 nd Cycle	Year of Study 1 st	Lecturer Dr John Sahalos
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Design of electric and electronic devices and equipment in a manner that makes them immune to electromagnetic interference (EMI)
- Design of electric and electronic devices and equipment in a manner that makes keeps them generated interference within specified limits
- Provide in depth the principles of Regulatory Authorities & Standards
- Analyze of the near and far field characteristics
- Provide in depth the shielding principles
- Provide in depth the design rules
- Give details for special topics

Learning Outcomes:

After completion of the course students are expected to:

- Demonstrate knowledge and understanding of EMC/EMI
- Explain the type of Standards and the Authorities
- Analyze problems of Immunity
- Analyze problems of Interference
- Apply principles in electronic device design
- Analyze topics of current interest

Course Contents:

- Description and Classification of main sources of Electromagnetic Interference
- Quantities and parameters for EMC control
- Standards and directives
- Methods and techniques of interference control
- Shielding - Grounding - Filtering-shielding from static fields (magnetic-electric) and from dynamic EMF
- Shielding devices (metal cavities) with walls bearing various types of openings (modeling techniques and design)

- EMC measurements
- Installation and instrumentation requirements - measuring equipment specifications and limits
- Outdoor measurements facilities (OATS) and chambers (anechoic, TEM, GTEM, reverberation)
- Measurements of radiated and conductive interference
- Measurements of Immunity to fields, currents, pulses and discharges
- Projects on EMC/EMI. Computer simulations using software packages and comparison of the results with the international literature

Learning Activities and Teaching Methods:

Lectures, in-class examples and exercises

Assessment Methods:

Homework, midterm exam, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Ch. Christopoulos	Principles and Techniques of Electromagnetic Compatibility	CRC Press	2007	0849370353

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
V. Prasad Kodali	Engineering Electromagnetic Compatibility (Principles, Measurements, Technologies and Computer Models) , 2 nd Ed	IEEE Press	2001	8121919851