

Electrification I

- 1. Course number and name:** 020IE1ES2 Electrification I
- 2. Credits and contact hours:** 6 ECTS credits, (3 lectures per week) x 1:15 contact hours.
- 3. Name(s) of instructor(s) or course coordinator(s):** Georges Nawfal
- 4. Instructional materials:** Instructor's PowerPoint slides, textbook
- 5. Specific course information**
 - a. Catalog description:**

Earthing System, low voltage electrical equipment, Overview of IEC 60364 and NFC-150 standards, low-voltage electrical equipment, control and protection equipment, electrical schemes, surge arresters. Photometry and lighting, photometric terms, luminous efficiency, different types of lamps, lighting of the premises, lighting standards, the different types of lighting, photometric class, photometric curve & Kruithof's rule. Lighting project: Lighting of closed areas, type of luminaire, calculation, UGR. Public lighting and projectors, functional lighting, residential lighting, projectors. Dialux, interface overview, model a project. Standards and AutoCAD, electrical Installation standards, definition of voltage ranges, the different ranges of voltage that exist, electrical protection classes, protection class "IP", mechanical Impact protection rating "IK", fire resistance rating, luminaire – incandescent wire test, the Bathrooms, Standards for electrical appliances in the bathroom, establishing an equipotential link. AutoCAD. Low voltage installation: ground connection diagrams, earth connections, Connecting the transformer neutral to the earth, Different types of electrical accidents, Ground connection diagrams. Power and minimum cross-section of a conductor, Installed Power, Absorbed Power, estimated installed power, Utilization Power, Choice of transformer power rating, Practical determination of the minimum cross-section of a conductor, voltage drop.
 - b. Prerequisites:** Electrotechnics (020ETCES1)
 - c. Required** for EE students.
- 6. Educational objectives for the course**
 - a. Specific outcomes of instruction:**
 - Acquire the necessary knowledge for the design of low voltage and extra low voltage electrical installations with reference to the NF C and IEC standards,
 - Master and apply the design rules of electrical installations.
 - Control and calculate the protections according to the ground connection diagrams.

b. PI addressed by the course:

PI	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	4.1	7.1
Covered	X	X	X	X	X	X	X	X	X	X
Assessed	X	X	X	X	X	X	X	X		

7. Brief list of topics to be covered:

- Introduction and Earthing System
- Low voltage Electrical Equipment
- Photometry & Lighting
- Lighting Project
- Introduction to the Dialux calculation software
- Public Lighting & Projectors
- Electrical Installation Standards
- AutoCAD
- Ground Connection Diagrams
- Power and minimum cross-section of a conductor