

Course Syllabus

1. Course number and name: 020IBTES3 | Electrification
2. Credits and contact hours: 6 credits, 3x1:15 course hours
3. Instructor's or course coordinator's name: Nasr FARHAT
4. Text book :
 - a. other supplemental materials:
Professor power point presentation and course material, calculation software and diverse documentation
5. Specific course information
 - a. brief description of the content of the course (catalog description)
This course introduces the basic concepts for lighting design and sizing of the low-voltage power distribution in buildings. It consists of lighting calculations, luminaires specifications and selection, green techniques and daylighting, LED sources state-of-the art lighting technologies and emergency lighting in addition to overcurrent and overvoltage protective devices selection, switching and control devices, Switchboards sizing, discrimination and cascading studies, conductors sizing, voltage drop and short-circuit calculations, earthing schemes and lightning protection case studies, brief introduction about transformers, diesel generators, UPS, Power Factor Correction Capacitors, motors starters and motor control centers as well as power load estimation calculation, power and lighting circuits layouts, substation and main electrical rooms sizing.
 - b. prerequisites or co-requisites: 020ETCES1 – Electrotechnics
 - c. Required/Elective/Selected Elective: Required
6. Specific goals for the course
 - a. Specific outcomes of instruction
 - Develop lighting layouts for commercial, residential or industrial buildings based on a software computed lighting calculations and convenient lighting fixtures selection,
 - Estimate the power load estimation of any project based on an assumption of “VA/sqm” for lighting, power and HVAC and other miscellaneous loads. Size the substation and main electrical rooms accordingly.
 - Develop low-voltage power distribution layouts and single line power diagram for commercial, residential or industrial buildings further to protective devices selection and power cables sizing and computation of voltage drop and short-circuit via a dedicated software

- Determining the necessity and sizing of a generator, UPS and power factor correction capacitor,
- Choosing the correct earthing scheme and designing of the appropriate lightning protection system,
- Specifying and sizing of the appropriate motors starters and understanding the differences between each other,

b. KPIs addressed by the course.

KPI	a2	c2	e3	k2	k3
Covered	x			x	x
Assessed	x	x	x	x	x
Give Feedback					

7. Brief list of topics to be covered and approximate lecture hours :

- Course introduction | (1 Lecture)
- Lighting Theory | (2 Lectures)
- Lighting Design | (3 Lectures)
- Lighting Fixtures and sources | (3 Lectures)
- Dialux software training | (3 Lectures)
- Emergency Lighting | (1 Lecture)
- Electrical Load Estimation, Substation and Electrical rooms sizing | (3 Lectures)
- LV switchgear and switchboards | (5 Lectures)
- Sizing and protection of conductors | (7 Lectures)
- Ecodial software training | (3 Lectures)
- Earthing Schemes | (3 Lectures)
- Lighting Protection and Overvoltage protection | (3 Lectures)
- Motors starters and motor control centers | (2 Lectures)
- Generators, UPS and PFCC brief introduction | (2 Lectures)
- Lighting and power circuits layouts | (1 Lecture)