



Course Code ECE-569	Course Title Electrical Design, Planning and Regulations	Credits (ECTS) 8
Department Engineering	Semester Fall or Spring	Prerequisites None
Type of Course Elective	Field Engineering	Language of Instruction English
Level of Course 2 nd Cycle	Year of Study 1 st	Lecturer(s) Dr Stylianos Hirodontis
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:

- Provide an in-depth understanding of the electrical design of different buildings.
- Introduce electrical drawings and common symbols using AutoCAD software.
- Introduce analytical techniques for the analysis of electrical installations.
- Present the commonly used configurations of circuits and explain their characteristics and methods of analysis.
- Introduce software for the calculation design of single and polyphase systems.
- Understand the practical skills required to inspect electrical installations.

Learning Outcomes:

Upon completion of the course students are expected to:

- Be able to design the electrics of buildings, relating to lighting, power and sockets according to the European Standards. Analyze the standard (BS 7671) requirements relating to electrical installation designs.
- Understand the fundamental principles for the design and installation of associated protective systems relating to electrical installations.
- Understand and apply the principles and procedures for the planning, preparation and selection of wiring systems and electrotechnical equipment in dwelling: Earthing and bonding, Isolation and switching, Overcurrent, Shock protection, (Cable calculations).
- Understand the requirements of electrical applications in special locations.

Course Contents:

- Introduction and Review of the Building Regulations so as to be able to meet the requirements of the Local Authority (legislation governing the occupation in electrical installation services design and commissioning in Cyprus)
- Electrical drawing software. Introduction of the AutoCAD program and learn based on exercises and tutorials how to use the program to create typical electrical drawings of buildings and distribution boards.
- Design examples of installations for domestic, commercial and Industrial buildings.
- Selection of Equipment: General, selection and erection of equipment, operational conditions and external influences, installation of cables, sizing of cables, external influences consequences, categories installation of equipment
- Analyze Earthing: Protective earthing, the means of earthing, the earthing conductor, system types and earthing arrangements, main equipotential bonding
- Review Protection Methods: What is Protection, Protection against electric Shock, Protection against direct contact, protection against indirect contact, Protection against over loads / over voltage / under voltage / short circuit currents / earth fault currents, position of protection devices
- Analyze discrimination characteristics of protective devices used in electrical installations
- Predict justified diversity factors for estimating the maximum demand of an electrical installation
- Socket Outlet Ring Circuits: radial and ring socket outlet circuits, voltage drop in socket outlet ring circuits.
- Learn about Inspection and Testing: protection against direct and indirect contact, insulation resistance, ring circuits, earth fault loop impedance, RCD test, external impedance, proving units.
- Design in special locations (Bathrooms, caravans and caravan parks, photovoltaic installations, swimming pools): risks and dangers associated with special locations, design of circuits part of special locations, special considerations.
- Employ software tools for the design and analysis of electrical installations
- During this time you will also be working on a set assignment which you will be reviewed with your tutor – design of 2 bedroom apartments or design of a typical shop.

Learning Activities and Teaching Methods:

Lectures, in-class examples, exercises, experiments

Assessment Methods:

Homework, midterm exams, project, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Paul Cook	Electrician's Guide to the Building Regulations: Part P. Wiring Regulations	Institution of Engineering and Technology	2008	0863418627, 9780863418624

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Institution of Engineering and Technology	Requirements for Electrical Installations: IET Wiring Regulations	Institution of Engineering and Technology and BSI	2011	1849192693, 9781849192699
Institution of Engineering and Technology	Guidance Note 3: Inspection and Testing Volume 3 of Guidance note	Institution of Engineering & Technology	2011	1849192758, 9781849192750