

AEEE452 - Electrical Installation design and applications

Course Title	Electrical Installation design and applications			
Course Code	AEEE452			
Course Type	Technical Elective			
Level	BSc (Level 1)			
Year / Semester	4 (Spring)			
Teacher's Name	Dr Nicholas Christofides			
ECTS	6	Lectures / week	3	Laboratories/week
Course Purpose	<p>This practical course employs a design and simulation software package for electrical installation designs. Through real design case studies, students have the opportunity to relate the theoretical aspects of the wiring regulations with practical examples such the electrical design study of a residence. The case studies examined are analysed before eventually using the software for the design. The software package has various modules incorporated and through guest lectures as well, students will have the opportunity to practise them. At the end of the course the students should be able to design electrical installations in compliance with the current wiring regulations.</p>			
Learning Outcomes	<p>By the end of the course, students must be able to:</p> <ol style="list-style-type: none"> 1. Apply the current wiring regulations for the design of electrical installations. 2. Analyse architectural drawings of electrical installations. 3. Apply diversity factors and calculate maximum demand for electrical installations. 4. Design electrical installations in compliance with the current wiring regulations using a software package. 			
Prerequisites	AEEE450	Co-requisites	none	
Course Content	<ol style="list-style-type: none"> 1. Theoretical Part: Earthing systems, basic and fault protection, protective devices and their selection criteria, Prospective short circuit current and external earth fault loop impedance, Earthing and earthing conductors. 2. Basics of electrical installations design: electrical symbols, Fundamental principles for the design of electrical installations, required information, responsibilities and obligations of the electrical engineer, formalities and cooperation with the electrical contractor or with other authorities. 3. Preliminaries of electrical installations design:, analysis of architectural drawings, load estimations/calculations, diversity and maximum demand, load balancing, discrimination, cable sizing, sizing of protective conductors. 			

	<p>4. Design of the electrical installations using a software package: the schematic module, the circuit edit module, selectivity study, forms and reports, the plan design module, single line diagrams.</p> <p>The Department, through its Research Policy acknowledges the importance of the synergies between research and teaching. As a result, students can be assigned to investigate further on a topic in order to better interpret something or identify current/new methods and practices. Through such activities, students can enter in the research culture and environment with the overall aim being to make them aware and to trigger ideas for the senior project and future postgraduate studies. Where just and fit, students are encouraged to participate in research projects that could complement their senior project requirements.</p>
<p>Teaching Methodology</p>	<p>The course is taught through lectures (3 hours per week) in the computer lab supported by the whiteboard and overhead projector. For the majority of the course students have the opportunity to use the software package for the design of electrical installations.</p> <p>With regards the theoretical part, examples are solved in the beginning of the course to remind the students of the requirements of the wiring regulations. When the main part of the course commences, real electrical installation design cases are practised in-class and assigned as part of the coursework.</p> <p>The lecture presentations are available on the e-learning platform for students to download along with other peripheral material such as past tests and exams, links and guides. Students are expected to take in-class hand-written notes. Students are also advised to use the subject's main textbook or reference books for further reading and practice in solving related exercises.</p> <p>Further literature research is encouraged by assigning to students a specific problem related to some issue and they are expected to gather relevant scientific information about how others have addressed the problem and report this information in written or orally.</p>
<p>Bibliography</p>	<ul style="list-style-type: none"> • IET & BSI, BS 7671:2008+A3:2015, IET Wiring Regulations 17th edition, 3rd amendment: London, IET. • IEE on-site guide to BS 7671:2008: Requirements for electrical Installations 17th edition, IET Publication, 17th, 2008 • BS7671:2008: Requirements for Electrical Installations, Guidance notes 1-8 • 17th edition IEE wiring regulations: explained and illustrated, Brian Scaddan, Newnes, 9th edition, 2011 • IEE Wiring Regulations: Inspection, Testing and Certification (17th edition IEE Wiring Regulations), Brian Scaddan, Newnes, 7th, 2011 • 17th edition IEE Wiring Regulations: Design & Verification of Electrical Installations, Brian Scaddan, Newnes, 7th, 2011 • Wiring Regulations in Brief: A complete guide to the requirements of the 17th edition of the IEE Wiring Regulations, Ray Tricker, Butterworth-Heinemann, 3rd edition, 2012 • Electrical Installation Design Guide: Calculations for Electricians and Designers, Paul Cook,

<p>Assessment</p>	<p>The assessment is continuously via mid-term tests and mini-assignments with the respective assessment weight, date and time being set at the beginning of the semester via the course outline or aurally discussed.</p> <p>Students are prepared for the final exam by revision and recapitulation and by solving exercises.</p> <p>The final assessment of the students is formative and summative and is in line with the subject's expected learning outcomes and course level. The coursework and the final exam grades are weighted 40% and 60%, respectively, and compose the final grade of the course.</p> <p>Various approaches are used for the continuous assessment of the students, such as mid-term written tests, oral presentations, quizzes, design assignments and design projects. An indicative weighted continuous assessment of the course is shown below (this is indicative and not supposed to add up to 100%):</p> <ul style="list-style-type: none"> • Assignment 10-15% • Homework 10% • Mid-Term written exams 60-70% • Mini design project 15-20% • Presentation 10-15% <p>The criteria considered for the assessment of each type of the continuous assessment and the final exam of the course are: (i) the comprehension of the fundamental concepts and theory of each topic, (ii) the application of the theory in solving related problems and (iii) the ability to apply the above knowledge in more complex design problems.</p>
<p>Language</p>	<p>English</p>