Course Title	Wiring Regulations: Design and verification of electrical installations				
Course Code	ECE470				
Course Type	Elective				
Level	Bachelor (1st Cycle)				
Year / Semester	4th Year / 8th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	The objective of this course is to expose students to the basic design and verification principles of electrical designed as summarized in the latest edition of the IET (previously called IEE) Wiring Regulations. Students are primarily concerned with the safety of personnel, protection principles, design approaches, circuit design and verification (inspection and testing) within the scope of electrical installation requirements and regulations.				
Learning Outcomes	Upon successful completion of this course, students should be able to: • Describe the basic principles and concepts of electrical installation design • Explain the safety requirements imposed for electrical installations and concerned during design • Identify the correct type of equipment in accordance to the requirements • Inspect and test electrical installations				
Prerequisites	ECE320, ECE465	Co-requisites	None		
Course Content	Introduction: Introduction to general design. Protection for safety fundamentals. Fundamentals of earthing. Earthing system types, arrangements and definitions. Equipotential bonding and automatic disconnection of supply. Supplementary equipotential bonding. Electrical installation design: In depth outline of electrical circuit design calculations and steps. Design current calculation. Nominal rating or protection setting. Choice and setting of protection in design. Application of correction factors. Tabulated conductor current carrying capacity calculation. Suitable conductor size selection. Voltage drop estimation. Evaluation of thermal constraints. Example case explanations. Electrical installation preliminaries: Assessment and interpretation of architectural drawings, distribution boards and circuits. Inspection and testing:				

	Introduction to inspection and testing purposes. Description and selection of test equipment. Calibration zeroing and care of test instruments. Performed tests description. Continuity of protective conductors. Continuity of ring final circuit conductors. Insulation resistance. Polarity. Impedance testing (earth fault loop impedance, total loop impedance and earth electrode resistance). Functional testing (prospective short-circuit current, residual current devices). Periodic inspection and testing. Special Locations: Introduction to the risks and dangers in locations that require special consideration (bathrooms, construction sites and agricultural/horticultural situations). Description of special circuits and design considerations. Solar Photovoltaic (PV) Power Supply Systems: Assessment of general characteristics, purpose supplies and structure, system earthing, protection for safety and against electric shock, protective measures. Selection and erection of equipment. Compliance with standards. Operational conditions and external influences. Selection and erection of wiring systems. Isolation, switching and control. Devices for isolation. Mobile or Transportable units: General requirements, protection, TN-IT systems, Selection and erection of equipment. Common requirements, wiring systems, proximity to non-electrical devices. Equipment / Generator sets: Code of practice, design, sizing, interconnection and inspection of PV, wind systems and backup supply generators.
Teaching Methodology	Face- to- face
Bibliography	B. Scaddan, Latest Edition of IET Wiring Regulations: Explained and Illustrated, Taylor & Francis. IET & BSI, Requirement of Electrical Installations, Latest Edition of IET Wiring Regulations: London, BS 7671. IET, IET On-site Guide to the Latest BS 7671 Wiring Regulations.
Assessment	Examinations 70% Assignments/Lab 20% Class Participation and Attendance 10% 100%
Language	English