Course Title	Advanced Power Principles				
Course Code	ETECH 200				
Course Type	Compulsory				
Level	First Cycle				
Year / Semester	Second Year / Fall				
Teacher's Name	Yiakoumi Iacovos				
ECTS	6	Lectures / week	1 ½	Laboratories / week	1 ½
Course Purpose and Objectives	The main objectives of the course are to: • Provide students with knowledge on advanced topics of electricity • Introduce students to AC circuits, calculations, and analysis • Explain the principles of transformers, operation, and figures of merit • Equip students with the necessary tools for the analysis and understanding of three-phase systems and circuits • Introduce students to motors and generators • Provide the tools for the judicious choice of cables used in earthing, earth leakage protection, or lighting.				
Learning Outcomes	After completion of the course students are expected to: • Perform impedance calculations in alternating current (AC) circuits • Calculate the power factor of a circuit and provide techniques for power factor correction • Analyze three-phase (3-P) circuits including motors connected in star or delta configuration • Differentiate among the different types of motors or generators • Perform calculation for the proper cable selection				
Prerequisites	None	Required	None		
Course Content	• Impedance calculations • Alternating waveforms and phasor representation • Power factor (PF) calculations and PF correction • Transformers (primary and secondary windings, coupling efficiency, loading effects, self and mutual inductance) • Three-phase (3-P) circuit calculations (star/delta connected motors, resistance & inductance in 3-P circuits, 3-P power, voltage drop in 3-P circuits) • Motors and generators (AC, DC, Alternators and Synchronous motors, and Induction motors) • Cable selection (calculations for earthing conductor, calculations for earth leakage protection, cable selection based on voltage drop and heat effects)				
Teaching Methodology	Lectures, in-class examples, exercises, practical.				

Bibliography	<u>Compulsory</u> • Introductory Circuit Analysis (2012), Robert L. Boylestad, Prentice Hall, 12th Edition, ISBN: 978-0137146666 • Lecturers notes.
Assessment	Homework: 10% Participation: 10% Laboratory: 20% Mid Term: 20% Final Exam: 40%
Language	Greek