

Course Title	Basic Electrical Principles				
Course Code	ETECH 100				
Course Type	Compulsory				
Level	First Cycle				
Year / Semester	First Year / Fall				
Teacher's Name	Hercules Heracleous				
ECTS	6	Lectures / week	3	Laboratories / week	One 3 hour lab per semester
Course Purpose and Objectives	<p>The main objectives of the course are to:</p> <ul style="list-style-type: none"> • Provide students with the basic principles of electricity • Employ techniques for the analysis of electrical circuits • Explain the operation and characteristics of components and circuits commonly used in electrical installations 				
Learning Outcomes	<p>After completion of the course students are expected to:</p> <ul style="list-style-type: none"> • Analyze basic electrical circuits using different methods and techniques • Evaluate voltages and currents across or through circuit components • Perform power and efficiency calculations for the characterization of systems or circuits • Differentiate between DC and AC systems • Analyze inductive and capacitive circuits 				
Prerequisites	None	Required	None		
Course Content	<ul style="list-style-type: none"> • Definitions of current, voltage, power, efficiency, etc. • Circuit theorems, rules, and laws (Ohm's law, Kirchhoff's laws, voltage divider rule, current divider rule, etc.) • Series, parallel, and mixed resistive circuits • Methods of analysis (Mesh and Nodal methods) • Circuit theorems (Thevenin, maximum power transfer, superposition, etc) • Source transformations • Direct versus alternating current (DC Vs AC) • Capacitors and Inductors (series and parallel arrangement) • Impedance calculations • Phasor representation of sinusoidal currents and voltages • Power factor and effective power • Real and reactive power 				
Teaching Methodology	Lectures, in-class examples, exercises, practical.				
Bibliography	<p><u>Compulsory</u></p> <ul style="list-style-type: none"> • Ray A. Jones and Jane G. Jones (2008), Safe Work Practices for the Electrician Jones & Bartlett Publishers, ISBN:978-0763752156 				

	<ul style="list-style-type: none"> • Lecturers notes. <p><u>Suggested</u></p> <ul style="list-style-type: none"> • Charge Alexander and Matthew Sadiku (2008), Fundamentals of Electric Circuits, McGraw Hill, ISBN:978-0077263195 • Mahmood Navhi and Joseph Edminister (2011) Schaum's Outline of Electric Circuits, McGraw Hill, 5th Edition ISBN:978-0071633727
Assessment	<p>Homework: 10%</p> <p>Participation: 10%</p> <p>Laboratory: 20%</p> <p>Mid Term: 20%</p> <p>Final Exam: 40%</p>
Language	Greek