University of Pretoria Yearbook 2021

Electricity and electronics 111 (EBN 111)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
NQF Level	05
Programmes	BEng Chemical Engineering ENGAGE
	BEng Civil Engineering ENGAGE
	BEng Computer Engineering
	BEng Computer Engineering ENGAGE
	BEng Electrical Engineering ENGAGE
	BEng Electronic Engineering ENGAGE
	BEng Industrial Engineering
	BEng Industrial Engineering ENGAGE
	BEng Mechanical Engineering
	BEng Mechanical Engineering ENGAGE
	BEng Metallurgical Engineering ENGAGE
Prerequisites	Admission to relevant programme.
Contact time	1 practical per week, 1 tutorial per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Electrical, Electronic and Computer Engineering
Period of presentation	Semester 1

Module content

Electrical quantities, units, definitions, conventions. Electrical symbols, ideal and practical current and voltage sources, controlled sources. Ohm’s law in resistive circuits, Kirchoff’s current and voltage laws, resistors in series and parallel circuits, voltage and current division, mesh current and node voltage methods. Circuit theorems: Linearity, superposition, Thevenin and Norton equivalent circuits, sources transformation, power calculation, maximum power transfer. Energy storage elements: current, voltage, power and energy in inductors and capacitors, inductors and capacitors in series and parallel. Ideal operational amplifiers and applications: inverting and noninverting amplifiers, summing amplifiers, current sources, integrators.

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