



University of Pretoria Yearbook 2016

Electrical engineering 221 (EIR 221)

Qualification Undergraduate

Faculty [Faculty of Engineering, Built Environment and Information Technology](#)

Module content

Transient response phenomena in RC, RL and RLC circuits: Natural response and step response. Alternating current (AC) circuits: Phasors, impedances, and power in AC circuits. The application of Ohm's law, Kirchoff's circuit theorems, matrix methods, and Thevenin and Norton equivalents to sinusoidal steady-state analysis. Three-phase circuits: Balanced three-phase circuits, star/delta configurations, and three-phase power transfer calculations. Magnetically coupled circuits: Mutual inductance, coupling factor, transformers, ideal transformers and autotransformers. Application of circuit theory to induction motors: basic principles of induction motors, equivalent circuit and analysis thereof, calculation of power and torque through application of Thevenin's theorem. Synoptic introduction to other types of motors.

Module credits 16.00

Programmes [BEng Chemical Engineering](#)

[BEng Chemical Engineering Engage](#)

[BEng Mechanical Engineering](#)

[BEng Mechanical Engineering Engage](#)

[BEng Metallurgical Engineering](#)

[BEng Metallurgical Engineering Engage](#)

Prerequisites EBN 111 or EBN 122 and WTW 161

Contact time 1 tutorial per week, 1 practical per week, 3 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Electrical, Electronic and Com

Period of presentation Semester 2

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