University of Pretoria Yearbook 2022

Power system components 320 (EKK 320)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
NQF Level	07
Programmes	BEng (Electrical Engineering)
	BEng (Electrical Engineering) ENGAGE
Prerequisites	EIR 211, 221 GS
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 2

Module content

This first module on power systems introduces the components which make up a power system. Single and three-phase basic concepts introduce popular analytical techniques for power system studies. Transformers are prominent components of the power system, and all their variants are studied, i.e. auto-transformers and tap changing transformers. At the heart of the generating units of most power stations are synchronous machines. Their equivalent circuit, real and reactive power control and two-axis machine model are considered. The components, modelling, voltage regulation, compensation, and transient behaviour of transmission lines are covered. Loads are also modelled for various components found in a typical power system.