

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Postgraduate Diploma in Engineering (Power System Planning and Operations): 2023

ADMINISTRATIVE/ACADEMIC REQUIREMENTS

GENERAL:

This is a programme offered by the Dept. of E&E Eng. in response to the expectation that variable renewable energy (VRE) will increase significantly in the future South African power system. Increased VRE generation means that traditional power system planning and operations will need to adapt: the programme aims to prepare students for such a future, focusing on the relevant changing technologies, methodologies, and processes.

ADMISSION:

Prerequisite: To qualify for admission to our PG Dip (Eng.) programme in Smart Grid Technology, the applicant must hold at least a B Tech or a BSc degree.

DURATION AND TEACHING LOAD:

Typically, two years on a full-time or part-time basis, although on a full-time basis the programme can potentially be completed within one year. The curriculum consists of eight one-week block modules with 40 hours of contact time, and an additional 110 hours work via distance education per module at NQF8 level is required.

COURSE MODULE DESCRIPTIONS

COMMON MODULES (2):

The Faculty of Engineering has identified some modules that cover aspects considered to be common to all branches of Engineering. Students following PG Dip (Eng.) programmes must include the following **two** modules in their curricula. The modules are listed below, and content descriptions are provided in Appendix A.

Module Title	Code	Host Department	Credits
Project Management 713	51993	Industry Engineering	15
Project Economics and Finance 712	58157	Civil Engineering	15

COMPULSORY MODULES (4):

The core modules of the PG Dip (Eng.) in Power System Planning and Operations are listed below. Students are required to complete all these **four** modules. For detailed module descriptions, please refer to <https://www.crses.sun.ac.za/coursework-masters-diploma/>

Module Title	Code	Host Department	Credits
Power System Data Analytics 774	14479	Industrial Engineering	15
Long-term Power System Planning 774	14477	E&E Engineering	15
Power System Operations 774	13806	E&E Engineering	15
Power System Analysis	n.a.	WITS School of Electrical and Information Engineering	15

ELECTIVE MODULES (2):

In addition, students are also required to select **two** additional elective modules, **maximum one** from the Overview and Technologies list below, and **minimum one** from the Planning and Operations list below:

Overview and technologies modules			
Module Title	Code	Host Department	Credits
Overview of the Power Industry	n.a.	UCT Mechanical Engineering	15
Smart Grid Technology Overview 774	13808	E&E Engineering	15
Smart Grid Communications 774	13807	E&E Engineering	15
Advanced PV Systems 744	13364	E&E Engineering	15
Energy Storage Systems 774	13810	E&E Engineering	15
Wind Energy 744	13185	M&M Engineering	15
Bioenergy 744	64904	M&M Engineering	15
Hydro and Ocean Energy 744	13186	Process Engineering	15
Hydrogen in the Energy System	TBA	M&M Engineering	15
Green Hydrogen Technology	TBA	Chemical Engineering	15

Planning and Operations Modules			
Module Title	Code	Host Department	Credits
Power System Asset Management	n.a.	UP Mechanical & Aeronautical Engineering	15
Distribution Customer Concepts 774	13805	E&E Engineering	15
Distribution Network Planning and Operations	n.a.	NWU Electrical, Electronic and Computer Engineering	15
Power System Flexible Operations	n.a.	UCT Mechanical Engineering	15

Students may apply to the Postgraduate Coordinator for recognition of modules done at other departments or institutions. However, no recognition can be granted for modules done as part of another qualification. Note that for modules presented at other institutions, students interested taking these modules will need to register for it themselves at the relevant institution, and then present the credits obtained to Stellenbosch University for recognition.

COURSE SCHEDULES AND DESCRIPTIONS:

A full calendar of the courses hosted by the E&E and M&M departments for this program as well as description of their content can be found here: <https://www.crses.sun.ac.za/coursework-masters-diploma/>

Information regarding the scheduling of the rest of the courses hosted by Industrial Engineering, Civil Engineering and Applied Mathematics can be found here: <https://ie.pages.cs.sun.ac.za/ds/> A description of their content may be found here: <https://ie.pages.cs.sun.ac.za/ds/meng/>