

POSTGRADUATE DIPLOMA IN NUCLEAR SCIENCE AND TECHNOLOGY

Curriculum: I503P

Qualification code: 7DC D01

Delivery mode: Distance

This programme supplies students with all the theoretical knowledge required by the NWU's research-based Master of Science in Engineering Sciences with Nuclear Engineering.

The field of Nuclear Engineering comprises the technical aspects, such as nuclear reactor design, and the nuclear technology management aspects, such as nuclear project management, nuclear policy and financial management.

The present programme focuses on the theoretical knowledge underlying the said technical aspects, especially nuclear reactor design, while another programme will focus on the technology management aspects.

This programme provides learners with:

- a broader and more in-depth knowledge of Nuclear Engineering sciences;
- advanced education in the field of Nuclear Engineering;
- problem-solving ability;
- integration of knowledge across fields; and
- the ability to execute a project in the field of Nuclear Engineering and to communicate the results orally and in writing.

List of modules

Module code	Descriptive name	Credits
NUCL 511	Nuclear Engineering I	16
NUCL 512	Radiation and the Environment	16
NUCI 521	Introduction to Thermal-Fluid Sciences	16
NUCI 578	Nuclear Engineering II	16
NUCL 525	Nuclear Project Management	16
NUCL 526	Nuclear Reactor Safety	16
NUCI 574	Nuclear Engineering Project	16
NUCI 577	Reactor Analysis	16

Curriculum outcomes

On completion of the qualification, the student should be able to demonstrate:

- A comprehensive and systematic knowledge base in nuclear engineering, as well as an in-depth knowledge of nuclear physics and thermal-fluid sciences.
- A coherent and critical understanding of the principles and theories of nuclear engineering; an ability to critique current research and advanced scholarship in an area of nuclear engineering; an ability to make sound theoretical judgements based on evidence; and an ability to think epistemologically (i.e., from a sound knowledge framework).
- An ability to identify, analyse and deal with complex and/or real-world problems and issues using evidence-based solutions and theory-driven arguments in the field of nuclear engineering.

- Efficient and effective information retrieval and processing skills; the identification, critical analysis, synthesis and independent evaluation of quantitative and/or qualitative data; and an ability to conduct research.
- An ability to present and communicate academic professional work effectively.

Compilation of curriculum

In accordance with General Academic Rule 3.1.1., the postgraduate diploma consists of a number of modules with a total credit value of 128 at NQF level 8.

One credit represents 10 notional study hours, which suggests that a student should expect to spend at least 1280 study hours on the programme.

The curriculum comprises of 8 core modules.

Components	Composition	Credits
8 x Modules	Core (Compulsory)	16 each
Total credits for the curriculum		128

Duration

The minimum term of study is one (1) year

For the maximum duration refer to General Academic Rule 1.14.

Minimum admission requirements for the qualification

- Three-year BSc degree (with Mathematics or Physics, at least at second year level); or
- BTech (Engineering).