

CAMPUS

DURBANVILLE  
(CAPE TOWN)

## DESCRIPTION

Renewable energy comes from natural sources that are replenished naturally over time – like sunlight, wind, tides and geothermal heat. It is clean, sustainable and helps fight climate change. Are you interested to learn more about the various renewable energy fields such as solar, wind, and hydrokinetic power? Are you passionate about solving problems creatively, protecting the environment and eager to make a positive difference? If so, the Higher Certificate in Renewable Energy Engineering may be for you.

The Higher Certificate Programme in Renewable Energy Engineering focuses on providing students with foundational knowledge and practical skills in the renewable energy field. This programme is designed to equip students with the required technical competencies and provide a foundation for Electrical Engineering.

This programme provides an alternative access pathway for students who show potential but did not fully meet the standard admission requirements in Mathematics and/or Physical Sciences. Students admitted under conditions will complete foundational modules in Engineering Mathematics and/or Engineering Physics alongside selected first-semester Higher Certificate modules. These foundational modules strengthen core knowledge and skills needed for success in the programme. Students must successfully pass the required foundational module(s) to continue with the Higher Certificate without conditions. Once passed, they join the mainstream academic track and continue their studies in alignment with the standard programme structure and progression requirements.

## ADMISSION REQUIREMENTS (WITH CONDITIONS)

- a Senior Certificate (SC); **OR**
- a National Senior Certificate (NSC) **with**;
  - English (Home language or first additional language) on at least level 3 (40-49%);
  - NSC Achievement rating of at least 3 (40-49%) for Mathematics or Technical Mathematics;
  - NSC Achievement rating of at least 3 (40-49%) for Physical Science or Technical Science; **OR**
- a National Senior Certificate – Vocational Level 4 (NC(V)) **with**;
  - NCV Achievement rating of at least 4 (50–59%) in English Language and Mathematics and Engineering Science;

*Successful applicants will be enrolled in Introduction to Engineering Mathematics and/or Introduction to Engineering Physics, depending on the module requirement. These foundational modules will be taken alongside two Higher Certificate modules, namely Engineering Professional Skills and Electromechanic Technology. During the initial six-week period, students will focus on the bridging module(s) instead of enrolling in Mathematics I and Physics I. At the end of this period, they will complete a formal assessment in the relevant module(s) for which they need to achieve a 50% pass mark. Students must pass the required module(s) to gain full admission into the Higher Certificate programme and continue their studies. If a student does not meet the required standard, they will not be permitted to progress further, as this forms part of the conditions of their admission.*

## CAREER OPPORTUNITIES

ENGINEER SUPPORT STAFF IN RENEWABLE ENERGY FIELD

ENGINEERING TECHNICAL ASSISTANT ON RENEWABLE ENERGY ESTABLISHMENTS

ENGINEERING TECHNICAL ASSISTANT TO ENGINEERING CONTRACTORS

RENEWABLE ENERGY ENGINEERING TECHNICAL ASSISTANT

## SPECIFIC REQUIREMENTS

### EQUIPMENT REQUIREMENTS

Registered students will be required to have access to the following equipment before their studies can commence:

- Smart device suitable for online learning
- USB to transfer information between devices and locations
- Laptop compatible with software covered in the programme. Student Recruitment can provide minimum device specifications if required.

### ADDITIONAL EXPENSES

The following costs may arise during the programme. These are not included in the tuition fees and should be budgeted for accordingly:

- Specialised stationery, textbooks, or equipment
- Printing and presentation costs
- Practical components
- Industry visits (petrol, entrance fees etc)

### ACCESS TO TECHNOLOGY

STADIO provides students with materials, resources, assessments (including online tests and quizzes), discussion opportunities, and administrative services through its student administration and learning environments. Access to the online facilities is essential for efficient communication, learning and success. You will need continuous access to study, using the resources mentioned above, and accessing and submitting some assessments.

### SYSTEM REQUIREMENTS

Students should also have access to the following resources/systems to ensure a seamless learning experience:

- Reliable broadband internet access (WI-FI is available at all our campuses, but you may prefer access from home as well)
- Firefox/Microsoft Edge/Chrome web browser
- Microsoft Word
- PDF Viewer
- Ability to scan and upload documents
- Email/cellphone for notification and communication

### PRACTICAL COMPONENTS

STADIO will provide laboratories with all the equipment students need for the practical sessions. Students are also provided with a toolkit and multimeter to use in the laboratories. While the School will furnish specific essential consumables, every student must obtain the needed electronic components and wires to build small electronic circuits for practical experiments. The list of required items will be supplied to students at the start of the semester.

## CURRICULUM OUTLINE

SEMESTER 1	1st YEAR		PRICE
Compulsory (Bridging Modules)	Introduction to Engineering Mathematics <b>AND / OR</b> Introduction to Engineering Physics	EMAH001 <b>AND / OR</b> EPHH001	R2 000 PER MODULE
Compulsory (All)	Electromechanic Technology I	EMTH152 (20 credits)	R9 000
	Engineering Mathematics I	EMAH152 (20 credits)	R9 000
	Engineering Physics I	EPHH152 (10 credits)	R4 500
	Engineering Professional Skills	EPSH152 (20 credits)	R9 000
SEMESTER 2	1st YEAR		PRICE
Compulsory (All)	Renewable Design Project	RDP152 (20 credits)	R9 000
	Renewable Systems Installation Practice	RSI152 (10 credits)	R4 500
	Solar and Wind Energy Systems	SWE152 (20 credits)	R9 000
	Storage and Generation	STG152 (20 credits)	R9 000
<b>CREDITS PER YEAR</b>	<b>140</b>		

# CURRICULUM OUTLINE

## ELECTROMECHANIC TECHNOLOGY I

This module provides the fundamental underpinning of basic electrical and mechanical engineering knowledge and phenomenon. Electromechanics focuses on the interaction of electrical and mechanical systems as a whole and how the two systems interact with each other.

## ENGINEERING MATHEMATICS I

This module introduces and strengthens fundamental mathematics knowledge to support basic science and discipline-specific engineering science modules in the curriculum and provide a foundation for further studies.

## ENGINEERING PHYSICS I

This module will teach students the fundamental underpinning concepts and principles related to the mechanics, electricity and magnetism necessary to support basic discipline specific engineering-science modules.

## ENGINEERING PROFESSIONAL SKILLS

This module provides the fundamental skills to harness the power of ICT to support engineering in various disciplines. The module aims to develop students who will use these skills consistently, fairly, and effectively while considering the framework of the South African engineering environment.

## INTRODUCTION TO ENGINEERING MATHEMATICS

This six-week foundational module is designed to strengthen and consolidate Grade 12 Mathematics concepts essential to success in first-year Engineering. The purpose of this module is to ensure that students develop the confidence, problem-solving ability, and mathematical fluency required to progress to Mathematics I.

## INTRODUCTION TO ENGINEERING PHYSICS

This six-week foundational module revises and reinforces core Grade 12 Physical Sciences concepts that underpin first-year Engineering Physics. The module aims to strengthen conceptual understanding, analytical thinking, and problem-solving skills to prepare students for Physics I.

## RENEWABLE DESIGN PROJECT

This module will provide the fundamental underpinning knowledge to wire, configure, test and integrate a renewable system application and will also introduce fundamental discipline specific engineering knowledge to support basic science modules in underpinning Renewable Project. An essential part of the project will be the extensive testing and recording of results. Performance analysis must be performed to demonstrate the effects of parameter changes, etc.

## RENEWABLE SYSTEMS INSTALLATION PRACTICE

This module aims to provide a knowledge base of the electrical, mechanical and regulatory requirements for installing a renewable energy (RE) source.

## SOLAR AND WIND ENERGY SYSTEMS

The purpose of this module is to provide a study into solar radiation and the application thereof in electrical systems as well as to provide a knowledge base PV and Wind energy design. The module covers a broad background knowledge base of the most important and prevalent solar technologies to aid in the understanding and interpretation of the maintenance and repair conditions of solar energy systems.

## STORAGE AND GENERATION

This module aims to provide a knowledge base on the generation, transmission, and distribution of electricity, as well as the protection of electrical distribution systems and energy storage systems.