

## IIE BACHELOR OF ENGINEERING IN ELECTRICAL AND ELECTRONIC ENGINEERING



4 or 5 years full-time



NQF Level 8



Min. 480 credits



SAQA ID: 101433

### WHY STUDY ENGINEERING?

Unlike traditional engineering programmes, the programme will expose you to the role of engineering in the real world as early as the first year of the programme. Our programme ensures that you are equipped with first-hand experience of the value that engineering adds to improving the quality of lives in communities.

The shortage of skilled engineers has a widespread effect on South Africa and the African continent at large, affecting the country's functioning in the globalised business environment and economy. Upon graduating with this degree, your skills will be in high demand, making you sought after by potential employers.

The programme is offered in two streams; namely the four-year mainstream programme and the five-year extended programme. The purpose of the extended programme is to offer students the opportunity to complete the first two years of the mainstream programme over a period of three years. The credit allocation for the first two years of the programme will therefore be spread over three years and allow the student to make a smooth transition into tertiary education.

### CAREER OPPORTUNITIES

The programme prepares graduates to assume engineering positions within private consultation firms, development laboratories and large and small private enterprises involved with the design, development, production, and marketing of Electrical and Electronic systems, subsystems and components of products. Graduates may also choose to pursue a career in academia, either as a discipline-specific lecturer or researcher.

# IIE BACHELOR OF ENGINEERING IN ELECTRICAL AND ELECTRONIC ENGINEERING

<b>MODULES</b>					
<b>YEAR 1</b>					
<b>Code</b>	<b>Module Name</b>	<b>Credits</b>	<b>Code</b>	<b>Module Name</b>	<b>Credits</b>
BCPH5111	Basic Concepts in Physics	12	ADMC5112	Advanced Mathematical Concepts	12
BMCO5111	Basic Mathematical Concepts	12	BEOP5112	Basics of Electrical and Optical Physics	12
COEM5111	Chemistry of Engineering Materials	12	CREN5112	Chemical Reactions in Engineering	12
EDGR5111	Engineering Design Graphics	16	MEIF5112	Mechanics: The Interaction of Forces	12
BACA5111	Basic accounting and Analysis	12	FNAC5112	Financial Accounting	12
INCT5111	Innovation & Creative Thinking	8	MACP5112	Multidisciplinary Applied Community Projects	16
JAEN5111	Java for Engineers	8			
<b>YEAR 2</b>					
<b>Code</b>	<b>Module Name</b>	<b>Credits</b>	<b>Code</b>	<b>Module Name</b>	<b>Credits</b>
EEFU6211	Electrical Engineering Fundamentals	12	ADIC6212	Advanced Differential and Integral Calculus	12
ICAL6211	Differential and Integral Calculus	14	SMLC6212	Strength of Materials under Simple Loading Conditions	12
BAEL6211	Basic Analogue Electronics	14	DIEL6212	Digital Electronics	8
CFEN6211	C Plus Plus for Engineers	14	EDMS6212	Economic Decision Making for Sustainability	12
ELTH6211	Electromagnetic Theory	12	MFFS6212	Mechanics of Fluid Flow Systems	8
FMEN6211	Financial Management for Engineers	12	SPPD6212	Sociological Perspectives of Development	12
FPMD6211	Fundamental Principles in Machine Dynamics	12	TPOF6212	Thermodynamic Properties of Fluids	8
<b>YEAR 3</b>					
<b>Code</b>	<b>Module Name</b>	<b>Credits</b>	<b>Code</b>	<b>Module Name</b>	<b>Credits</b>
AANE7311	Advanced Analogue Electronics	12	CODE7312	Communication for Development	12
DISY7311	Digital Systems	12	DESP7312	Design Project	12
INME7311	Instrumentation and Measurement	12	EMBS7312	Embedded Systems	12
NUME7311	Numerical Methods	12	POEL7312	Power Electronics	8
POWS7311	Power Systems	12	SIPR7312	Signal processing	12
SEPP7311	Software Engineering Principles & Practice	8	STAM7312	Statistical Methods	8
SISY7311	Signals & Systems	8	TELS7312	Telecommunication Systems	12
<b>YEAR 4</b>					
<b>Code</b>	<b>Module Name</b>	<b>Credits</b>	<b>Code</b>	<b>Module Name</b>	<b>Credits</b>
CSAU8411	Control Systems & Automation	12	HVEN8411	High voltage Engineering (Elective)	8
PGRE8411	Power Generation and Renewable Energy Systems	16	IMGP8411	Image Processing (Elective)	8
ENEN8411	Entrepreneurship for Engineering	12	DACM8411	Data Communications (Elective)	8
PRMB8411	Project Management (Elective)	8	CONE8411	Computer Networks (Elective)	8
ADSY84111	Advanced Power Systems (Elective)	8	DEPR8412	Design Project	36
ELMA8411	Electrical Machines (Elective)	8	REPO8412	Research Project	36

# IIE BACHELOR OF ENGINEERING IN ELECTRICAL AND ELECTRONIC ENGINEERING (EXTENDED PROGRAMME)

## MODULES

### YEAR 1

Code	Module Name	Credits	Code	Module Name	Credits
BCPH5111	Basic Concepts in Physics	12	ADMC5112	Advanced Mathematical Concepts	12
BMCO5111	Basic Mathematical Concepts	12	BEOP5112	Basics of Electrical and Optical Physics	12
COEM5111	Chemistry of Engineering Materials	12	CREN5112	Chemical Reactions in Engineering	12
EDGR5111	Engineering Design Graphics	16	MEIF5112	Mechanics: The Interaction of Forces	12

### YEAR 2

Code	Module Name	Credits	Code	Module Name	Credits
JAEN5111	Programming in Java	8	ADIC6212	Advanced Differential and Integral Calculus	12
INCT5111	Innovation & Creative Thinking	8	SMLC6212	Strength of Materials under Simple Loading Conditions	12
BACA5111	Basic Accounting and Analysis	12	FNAC5112	Financial Accounting	12
EEFU6211	Electrical Engineering Fundamentals	16	MACP5112	Multidisciplinary Applied Community Projects	16
ICAL6211	Differential and Integral Calculus	12			

### YEAR 3

Code	Module Name	Credits	Code	Module Name	Credits
CFEN6211	C++ for Engineers	8	MFFS6212	Mechanics of Fluid Flow Systems	8
BAEL6211	Basic Analogue Electronics	12	SPPD6212	Sociological Perspectives of Development	12
FMEN6211	Financial Management for Engineers	12	TPOF6212	Thermodynamic Properties of Fluids	8
FPMD6211	Fundamental Principles in Machine Dynamics	12	DIEL6212	Digital Electronics	8
ELTH6211	Electromagnetic Theory	8	EDMS6212	Economic Decision Making for Sustainability	12

# IIE BACHELOR OF ENGINEERING IN ELECTRICAL AND ELECTRONIC ENGINEERING (EXTENDED PROGRAMME)

## YEAR 4

Code	Module Name	Credits	Code	Module Name	Credits
AANE7311	Advanced Analogue Electronics	12	POEL7312	Power Electronics	8
SISY7311	Signals & Systems	8	TELS7312	Telecommunication Systems	12
DISY7311	Digital Systems	12	SIPR7312	Signal processing	12
INME7311	Instrumentation and Measurement	12	EMBS7312	Embedded Systems	12
NUME7311	Numerical Methods	12	DESP7312	Design Project	12
SEPP7311	Software Engineering Principles and Practice	8	STAM7312	Statistical Methods	8
POWS7311	Power Systems	12	CODE7312	Communication for Development	12

## YEAR 5

Code	Module Name	Credits	Code	Module Name	Credits
CSAU8411	Control Systems & Automation	12	HVEN8411	High voltage Engineering (Elective)	8
PGRE8411	Power Generation and Renewable Energy Systems	16	IMGP8411	Image Processing (Elective)	8
ENEN8411	Entrepreneurship for Engineering	12	DACM8411	Data Communications (Elective)	8
PRMB8411	Project Management	8	CONE8411	Computer Networks (Elective)	8
ADSY84111	Advanced Power Systems (Elective)	8	DEPR8412	Design Project	36
ELMA8411	Electrical Machines (Elective)	8	REPO8412	Research Project	36





## IIE BACHELOR OF ENGINEERING IN ELECTRICAL AND ELECTRONIC ENGINEERING

A student may not proceed to the next year if all the stipulated pre- and co-requisites have not been satisfied because he/she will require these requisites to be able to undertake the level of study required in the next year.

### MINIMUM ADMISSION REQUIREMENTS

Minimum Admission Requirements: 4-year programme  
**National Senior Certificate (NSC)**

Bachelor pass with English 50%, Mathematics 70% and Physical Science 60%

**National Certificate (Vocational) (NC(V))**

Bachelor pass with English 50%, Mathematics 70% and Physical Science 60%

**Senior Certificate (SC)**

Endorsement with English: 50%, Maths: 70%, Physical Science: 60%

**Senior Certificate (Amended) (SC(a))**

Bachelor pass with English: 50%, Maths: 70%, Physical Science: 60%

**International**

International Admission requirements for 5 year option:

A USAf Exemption Certificate with 60% or equivalent for Maths 50% or equivalent for Physical Science AND 50% or equivalent for English or requisite test, e.g. TOEFL, IELTS is required

### NOTES

A cognate Higher Certificate OR any cognate 240 credit Diploma OR an Advanced Certificate OR 360 credit Diploma Or an appropriate IEMSA Foundation Programme may satisfy the minimum admission requirements to degree studies.

Minimum Admission Requirements: 5-year programme  
**National Senior Certificate (NSC)**

English: 50% , Maths: 60%, Physical Science: 50%

**National Certificate (Vocational) (NC(V))**

English: 50%, Maths: 60%, Physical Science: 50%

**Senior Certificate (Amended) (SC(a))**

Bachelor pass with English: 50%, Maths: 60%, Physical Science: 50%

### ALTERNATE ADMISSION

(Should the English requirement not be met at NSC Grade 12, entrance may be granted if the English requirement is met based on the final Grade 11 mark.)

### English

NSC 40-49% (If achieved 50% min in final Grade 11 results.)



#### CONTACT US

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#### CAMPUS ADDRESS

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Social media    