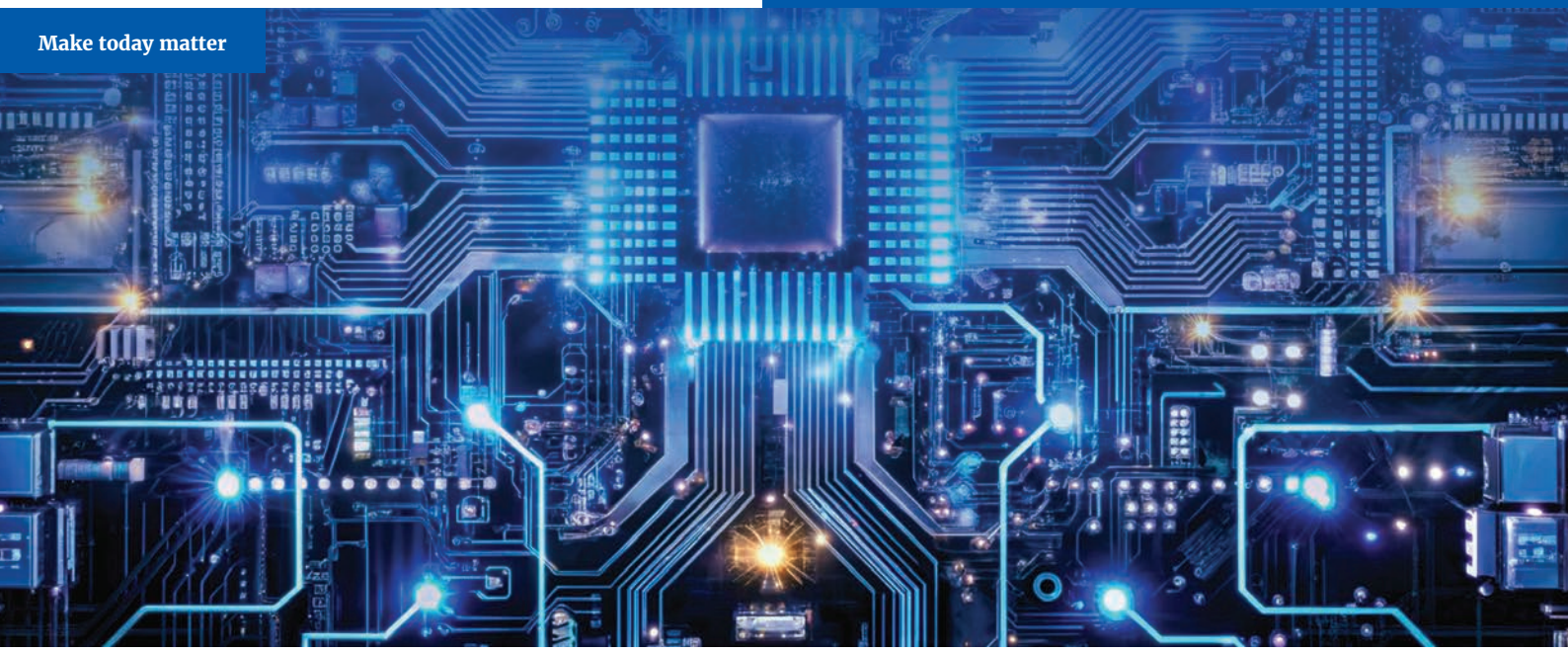
UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Bachelor of Engineering in Electrical Engineering

Make today matter



What does the programme entail?

Electrical engineering is one of the three internationally accepted and closely related subdisciplines in the traditional field of electrical engineering (electrical engineering, electronic engineering and computer engineering). This programme covers the vast and continuously expanding field of energy generation, distribution and utilisation. Practically all technological systems in the world rely on electrical power as a source of energy. An electrical engineer is someone with a talent for introducing alternative and renewable sources of electrical energy into everyday life.

Enormous challenges exist for utilising and storing electrical energy derived from such sources as the sun (solar energy), wind, biomass and water (hydro-energy), and even nuclear energy. In South Africa, pumped storage systems are extensively used, and new systems are being developed. The most cost-effective way of saving electrical energy is to spend a great deal of research and development time and money on sustainable energy-efficient equipment, from electrical machines to geysers and lighting.

There is a shortage of qualified electrical engineers all over the world. An electrical engineer has a thorough understanding of the basic sciences and a good education in the theoretical and practical aspects (including design, installation and maintenance methodology) of electrical engineering.

Who are the ideal candidates?

An electrical engineer needs to be innovative and has to keep abreast of new developments in the field of technology. Many electrical engineers move into management positions very quickly and use analytical, synthesis, managerial and leadership skills to reach the highest levels of corporate management.

What skills do I need?

- Critical thinking
- Complex problem-solving
- Innovative thinking
- Technological knowledge
- Analytical skills

What makes this programme unique?

Our programmes are internationally accredited by the Engineering Council of South Africa (ECSA).

Which companies employ our graduates?

Electrical engineering graduates have access to a wide range of job opportunities. The advances in electrical energy generation and distribution create tremendous opportunities for entrepreneurs in South Africa and in the rest of the world.

Research and development opportunities are available locally at institutions such as Denel, Eskom, the Council for Scientific and Industrial Research (CSIR) and Transnet.

Where are electrical engineers employed?

- Electricity utility companies
- Mining houses
- Municipalities
- Consulting engineers
- Transportation (rail and sea) companies
- Research organisations, locally and abroad

Due to the current worldwide energy crisis, there is an urgent need for environmentally friendly ways to generate power and energy. There is a bright future in renewable energy.

LEARN MORE

Bachelor of Engineering in Electrical Engineering

(continued)

Career opportunities

Electrical engineering is prevalent in almost all application fields and technologies where electrical energy is consumed. Every known piece of equipment requires a source of energy—powered by mains, batteries or photovoltaic (PV) cells—and needs the skill of an electrical engineer.

The transport and manufacturing industries are excellent examples of industries in which electrical engineers use their superior skills to design, develop and maintain electrical machines (motors and generators) with control systems for optimal performance. Most ships and trains are electrically powered.

Other applications of electrical engineering include power reticulation in cities, townships, shopping malls and factories. The lighting of indoor and outdoor areas forms the basis of our daily activities. It includes lighting at:

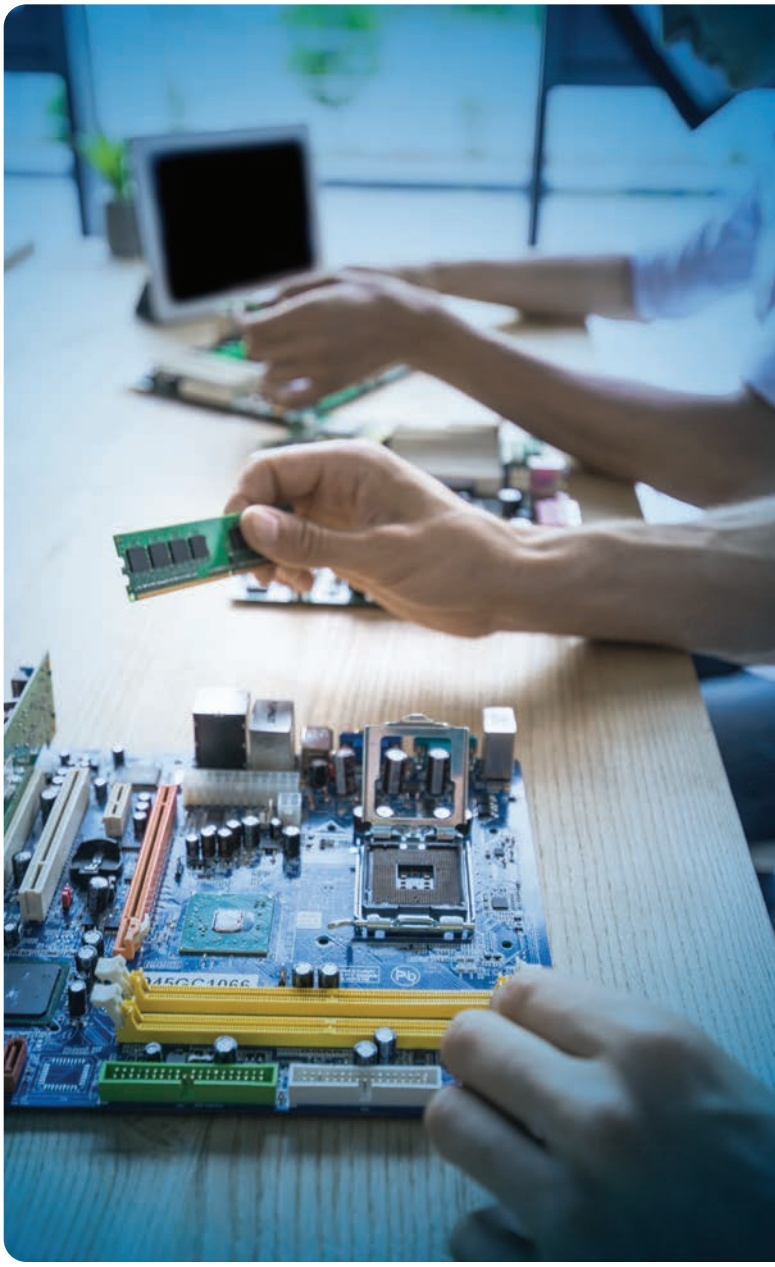
- Sports stadiums
- Street lighting
- Safety and security lighting
- Task and ambient lighting
- Lighting for offices, entertainment and many other specialist applications

Regardless of whether it is medicine, the military, entertainment, sports, education or any other field of technology, electrical engineers will be there to provide the energy and control required.

Electrical engineering aims to change the world by discovering ways to generate, transmit, distribute and utilise electrical energy in an environmentally friendly and sustainable way.

Typical subsystems that may form part of larger electrical systems are:

- Electrical machines of all sizes and shapes
- Power electronics
- Control systems
- Power system components
- Power quality and network stability
- Lamps and lighting
- Power supplies
- Photovoltaic (PV) cells
- Solar geysers
- Space systems
- Robotics and energy management systems



Minimum admission requirements

Programme	Minimum requirements for NSC/IEB for 2026			
	Achievement level			APS
SCHOOL OF ENGINEERING	**English Home Language or English First Additional Language**	**Mathematics**	**Physical Sciences**	
Bachelor of Engineering in Electrical Engineering [4 years]	5	6	6	**35**

The suggested second-choice programmes for Bachelor of Engineering in Electrical Engineering are Bachelor of Science in Chemistry, Bachelor of Science in Mathematics and Bachelor of Science in Physics if your APS and subject requirements of your first-choice programme are not obtained.

Contact information Prof Herman Myburgh (Function Head: Marketing) | **Tel** +27 (0)12 420 4540 | **Email** eerc@up.ac.za
Websites www.ee.up.ac.za | www.up.ac.za/school-of-engineering | www.up.ac.za/ebit-postgraduate

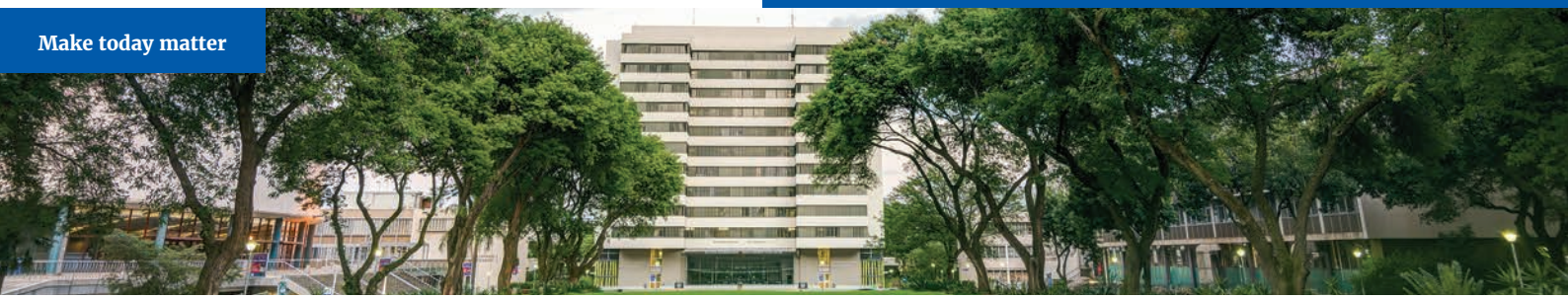
UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Minimum requirements for applicants with a school leaving certificate not issued by Umalusi (South Africa)

Make today matter



Refer to the International undergraduate prospectus at www.up.ac.za/programmes > Undergraduate > Admission Information or click here for more information.

- The closing date for applications for programmes in this faculty is 30 June.
- Meeting the minimum admission requirements does not guarantee admission into a programme.

FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY Programmes	Minimum requirements for 2026 Achievement level									
		GCSE #			AS Level	A Level	IB			
		The qualifications in the two columns below will be considered only for conditional admission. If final AS and/or A levels have been completed, these two columns will not apply. It can also not be used for final admission and/or registration.								
	Compulsory subjects	CIE IGCSE LGCSE BGCSE EGCSE O Level NSSC OL CGCE UCE NECO WAEC WASSCE ZGCE	UK England Wales Northern Ireland Pearson Edexcel GCSE	HIGCSE NSSC HL	GCE CIE NSSC AS	GCE CIE CGCE UACE WAEC ZGCE	IB SL	IB HL	KOMBI ABITUR	KCSE
Bachelor of Science in Architecture	English Mathematics Physics	C D D	4 3 3	3 3 3	C D D	E E E	4 2 2	3 2 2	60-69% 50-59% 50-59%	B C+ C+
Bachelor of Town and Regional Planning	English Mathematics	C D	4 3	3 3	C D	E E	4 2	3 2	60-69% 50-59%	B C+
Bachelor of Science in Construction Management	English Mathematics Physics Chemistry (or Accounting*)	C C D D	4 4 3 3	3 3 3 3	C C D D	E E E E	4 4 2 2	3 3 2 2	60-69% 60-69% 50-59% 50-59%	B B C+ C+
Bachelor of Science in Real Estate										
Bachelor of Science in Quantity Surveying										
Bachelor of Engineering in Industrial Engineering	English Mathematics Physics Chemistry	C B B B	4 5 5 5	3 2 2 2	C B B B	E D D D	4 5 5 5	3 4 4 4	60-69% 70-79% 70-79% 70-79%	B B+ B+ B+
Bachelor of Engineering in Chemical Engineering										
Bachelor of Engineering in Civil Engineering										
Bachelor of Engineering in Electrical Engineering										
Bachelor of Engineering in Electronic Engineering										
Bachelor of Engineering in Mechanical Engineering										
Bachelor of Engineering in Metallurgical Engineering										
Bachelor of Engineering in Mining Engineering										
Bachelor of Engineering in Computer Engineering										

Only English with at least a C symbol on this level can be used for final admission.
* Offer both PHYSICS and CHEMISTRY, or ACCOUNTING only

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Make today matter

Minimum requirements for applicants with a school leaving certificate not issued by Umalusi (South Africa)

FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY Programmes	Minimum requirements for 2026									
	Achievement level									
		GCSE #			AS Level	A Level	IB			
		The qualifications in the two columns below will be considered only for conditional admission. If final AS and/or A levels have been completed, these two columns will not apply. It can also not be used for final admission and/or registration.								
	Compulsory subjects	CIE IGCSE LGCSE BGCSE EGCSE O Level NSSC OL CGCE UCE NECO WAEC WASSCE ZGCE	UK England Wales Northern Ireland Pearson Edexcel GCSE	HIGCSE NSSC HL	GCE CIE NSSC AS	GCE CIE CGCE UACE WAEC ZGCE	IB SL	IB HL	KOMBI ABITUR	KCSE
Bachelor of Information Technology in Information Systems	English Mathematics	C C	4 4	3 3	C C	E E	4 4	3 3	60-69% 60-69%	B B
Bachelor of Information Science	English	D	3	3	D	E	3	2	50-59%	C+
Bachelor of Information Science specialising in Publishing	English	C	4	3	C	E	4	3	60-69%	B
Bachelor of Information Science specialising in Multimedia**	English Mathematics	D C	3 4	3 3	D C	E E	3 4	2 3	50-59% 60-69%	C+ B
Bachelor of Science in Computer Science	English Mathematics	C B	4 5	3 2	C B	E D	4 5	3 4	60-69% 70-79%	B B+
Bachelor of Science in Information Technology in Information and Knowledge Systems	English Mathematics	D B	3 5	3 2	D B	E D	3 5	3 4	50-59% 70-79%	C+ B+
Bachelor of Engineering This is a 5-year programme in all Engineering disciplines. *Previously called ENGAGE*	English Mathematics Physics Chemistry	C C C C	4 4 4 4	3 3 3 3	C C C C	E E E E	4 4 4 4	3 3 3 3	60-69% 65% 65% 65%	B B B B

Only English with at least a C symbol on this level can be used for final admission.
* Offer both PHYSICS and CHEMISTRY, or ACCOUNTING only
**Possible name change to: Bachelor of Information Science specialising in Interactive Technology