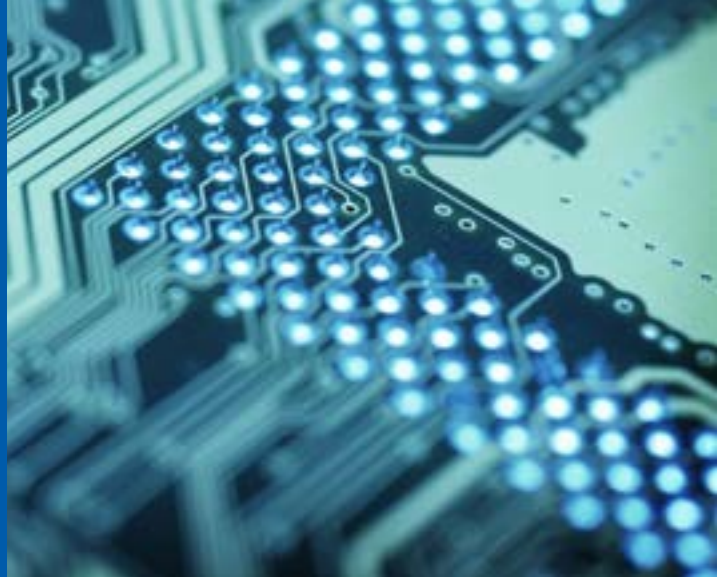


DEPARTMENT OF ELECTRICAL, ELECTRONIC AND COMPUTER ENGINEERING

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www.up.ac.za/eece



IMPACT

The Department produces world-class engineers in electrical, electronic and computer engineering. Many of its graduates are leaders in engineering and also top inventors and entrepreneurs in the world, and many of its lecturers are world-class researchers. Close contact with industry, government and other institutions through contract research and consultation activities add value to a postgraduate degree in any of these three disciplines.

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RESEARCH GROUPS WITH CHAIRS, CENTRES AND INSTITUTES

Full details:

www.up.ac.za/eece/article/2723575/postgraduate-studies

Bioengineering

Control Systems

Electronics and Microelectronics

- Carl and Emily Fuchs Institute for Microelectronics (CEFIM)

Intelligent Systems

Just Energy Transition

- Centre for New Energy Systems (CNES)
- Exxaro Chair in Energy Efficiency
- National Hub for Postgraduate Programme in Energy Efficiency and Demand-side Management
- Rand Water Chair in Electrical Engineering

Microwaves and Antennas

- Centre for Electromagnetism (CEM)

Power Systems

- Smart Grid Laboratory
- Rand Water Chair

Signals, Information Fusion and Communications

- Multichoice Chair in Machine Learning
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[MEng Electrical Engineering](#)
[MEng Electronic Engineering](#)
[MEng Computer Engineering](#)
[MEng Bioengineering](#)
[MEng Microelectronic Engineering](#)
[MSc Applied Science](#)

[PhD Electrical Engineering](#)
[PhD Electronic Engineering](#)
[PhD Computer Engineering](#)

CAREER PATHWAYS

Electrical engineering focuses on the generation, distribution, conversion and the efficient utilisation of electrical energy. Traditional generation stations include coal-fired, hydro and nuclear power stations. There is increased penetration of renewable energy generation such as wind or photovoltaic power into traditional grids. Communication and data collection technologies are integrated to provide more information on the state of the grid and improve the efficiency. These elements apply to electrical grids at various levels of scale including industrial, commercial, residential and micro-grid scale.

Electronic engineering is a very broad field and encompasses all kinds of electronic systems. Sub-fields include microelectronics, signal processing, power electronics, bioengineering, control systems, optics and electromagnetism. Electronic engineering manifests itself in telecommunications (television, radio, cellular communications, optical communication and more), manufacturing plants (control systems and power electronics), military systems, transport systems, and bio-medical applications.

Computer engineering has its focus in both hardware and software. Computer engineers specialise in combining hardware and software to produce optimal solutions to real-world problems. Computer engineering involves the following disciplines: software engineering, the Internet, biometric security systems, wireless communication, telecommunication, computer networks, data security, data storage, electronic banking, electronic commerce, signal processing, image processing, embedded systems, and designing artificial intelligence algorithms for various applications.

The Department's accreditation from the Engineering Council of South Africa enables graduates to register as candidate engineers, and to apply for registration as professional engineers after obtaining the required industry exposure. For those wishing to engage in research activities related to electric, electronic and computer engineering, the Department hosts a rich offering in terms of postgraduate qualifications, and a nurturing and vibrant environment for conducting such studies.

Curriculum, rules and regulations: www.up.ac.za/yearbooks/home

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