# DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING SCIENCE

## *A Cutting-Edge Department for Industry 4.0*

## *Smart Department for Smart Engineers*

*Prepared by*
**Head of Department:**
**Prof Khmaies Ouahada**
**2020**

**Faculty of Engineering and the Built Environment**

UNIVERSITY OF JOHANNESBURG

The Future Reimagined

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# Welcome from the Head of Department

On behalf of our esteemed members of the Department of Electrical and Electronic Engineering Science, Faculty of Engineering and the Built Environment, University of Johannesburg, it is my privilege and honour to welcome you. Since 2005, when the University of Johannesburg was established, we have grown and developed our proficiency in the field of electrical science-based engineering undergraduate and postgraduate programmes.

Our undergraduate curriculum is in line with industry developments. The content of our courses are up to date with the new scientific and technological developments and the Fourth Industrial Revolution (4IR). Our determined academic and support staff contribute impressively in the success of our students and the elevation of our departmental standard. Our students have distinguished themselves in theory, practicals, leadership and teamwork, making themselves exceptionally marketable in the job market.

The Department offers master's degrees by research and coursework and doctoral degree at the postgraduate level. We have many productive research groups carrying out high-standard interdisciplinary research in collaboration with national and international prestigious academic and research institutes. Our modern and well-equipped research laboratories support our academic and research programmes.

Our academic members have excelled themselves nationally and internationally and have been awarded at high levels with many prestigious awards. Several academic staff have strong industrial collaboration and are up to date with all the industry challenges. They also serve on the editorial boards of national and international journals, review technical reports and take part in the organisation of national and international workshops and conferences.

Whether you are a prospective undergraduate, graduate or postgraduate student, or professional, I hope this document will be informative and provide a brief overview of the Department's academic and research structures, our facilities, our community engagement and details of students' activities.

Please do not hesitate to contact us for further information. Our details can be found at the end of this booklet. You are also free to directly contact our staff via email, using the addresses listed on the departmental web page.

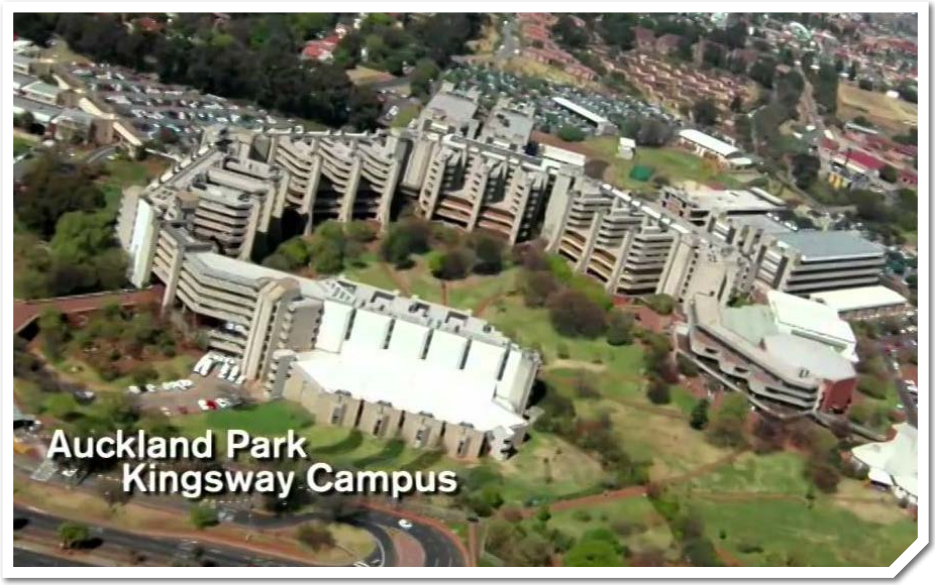
We are proud of our community engagement and participation in the uplifting of our society.

Join us and join the success.

Best wishes
**Khmaies Ouahada**
***Professor and Head of Department***

# 1. DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING SCIENCE

The University of Johannesburg (UJ) is strategically positioned in the vibrant, multicultural and dynamic City of Johannesburg, the economic capital of South Africa. The University is a vibrant and cosmopolitan university, anchored in Africa, which is dynamically shaping the future through innovation and the collaborative pursuit of knowledge and striving towards global excellence and stature (GES). The embodiment of core values, such as independent thinking, meaningful engagement and sustainable development with a foundation deeply rooted in consistency and transparency, makes the University an international institution of choice for global excellence and stature. The University's academic architecture reflects a comprehensive range of learning programmes, leading to a variety of qualifications, from vocational and traditional academic, to professional and postgraduate to meet the Fourth Industrial Revolution (4IR) challenges referring to a systemic transformation that impacts on civil society, governance structures, human identity, economics and manufacturing.




The Department of Electrical and Electronic Engineering Science (DEEES) forms part of the Faculty of Engineering and the Built Environment at the University of Johannesburg and is considered as the largest department in terms of student number, academic staff and personnel.

The Department (DEEES) runs two electrical engineering programmes, namely:

- Baccalaureus Ingeneriae (Electrical and Electronic Engineering), abbreviated as BEng EE with programme code: B6ELSQ.
- Baccalaureus Ingeneriae (Electrical and Electronic Engineering), endorsed with Information Technology, abbreviated as BEng EE + IT with programme code: B6EITQ (pipeline/continuing students only).

As our programmes are electrical science-based engineering, there is a joint committee with the Faculty of Natural Sciences overseeing the admissions and the examination results.

The person responsible for both programmes is the Head of Department, Prof Khmaies Ouahada, who has been appointed on a three-year contract from 1 December 2018.

# 2. DEPARTMENTAL STRUCTURE

The Department of Electrical and Electronic Engineering Science (DEEES) forms part of the Faculty of Engineering and the Built Environment at the University of Johannesburg and is considered among the largest departments in terms of student number, academic staff and personnel.

## 2.1 DEPARTMENT STAFF

The Department of Electrical and Electronic Engineering Science has an exceptional and outstanding reputation for its teaching and research. With 23 highly qualified, skilful and motivated full-time academic and support staff members, and thanks to their talents, hard work and dedication, the Department is always able to consistently achieve international recognition for excellent teaching and research. Following is the list of our academic and support staff.

### 2.1.1 Academic staff

| Name | Title | Position | Specialty |
|---|---|---|---|
| Khmaies Ouahada | Prof | Professor/Head of Department | Telecommunications |
| David Limebeer | Prof | Distinguished Professor | Control and Optimized systems |
| Ghanshyam Singh | Prof | Professor | Telecommunications |
| Nnamdi Nwulu | Prof | Associate Professor | Power systems |
| Yanxia Sun | Prof | Professor | Control systems |
| Arnold de Beer | Dr | Senior Lecturer | Electromagnetic Compatibility |
| Michael Grobler | Mr | Senior Lecturer | Opto-Electronics |
| Reolyn Heymann | Dr | Senior Lecturer | Telecommunications |
| Johan Meyer | Prof | Associate Professor | Systems Engineering |
| Oliver Dzobo | Dr | Senior Lecturer | Power systems |
| David Pentz | Dr | Senior Lecturer | Power Electronics |
| Deon Sabatta | Dr | Senior Lecturer | Biomedical Engineering |
| Suné von Solms | Prof | Associate Professor | Systems Engineering |
| Theo Swart | Prof | Associate Professor | Telecommunications |
| Shastri Jayram | Mr | Lecturer | Wireless Communications |
| Lucas Tivani | Mr | Assistant Lecturer | Wireless Sensor Networks |
| Richard Ndjiongue | Dr | Senior Lecturer | Telecommunications |
| Omowunmi Longe | Dr | Senior Lecturer | Energy management |

### 2.1.2 Support staff

| Name | Title | Position |
|---|---|---|
| Roana Mudzunga | Mrs | Departmental Academic Secretary |
| Mpho Mabolabola | Ms | Departmental Research Secretary |
| Thembinkosi Nkonyana | Mr | Technical Manager |
| Richard Mabuyangwa | Mr | Technician |
| Nelson Seoma | Mr | Technician |

## 2.2 LABORATORY FACILITIES

Students in the Electrical and Electronic Engineering programme have access to a number of laboratories. Specialised undergraduate and graduate laboratories are available for the final-year projects, whereas some facilities at centres of excellence and specialised research groups are available during business hours.

Equipment in the undergraduate laboratories may be used for typical measurements, laboratory experiments and projects, as is appropriate for electrical and electronic engineering. This is one of the laboratories that have been added to accommodate students who work on their projects and experiments during their spare time. Additional space has also been allocated with tables and plug points to assist students to practise and work on their projects. With the component and equipment store in the middle, two student groups performing different experiments could be accommodated simultaneously. All the facilities are fully engaged when the first-year students attend laboratory sessions.

## 2.3 STUDIO-BASED LEARNING LECTURE AND PRACTICAL LABORATORY

For a better educational environment and coping with the new teaching technologies, the Department has established studio-based learning lecture and practical venues. These venues consist of individual workstations for each student, which contain a networked computer and specialised equipment as required by the respective classes. These venues can be used for lectures, practical sessions as well as self-study work when classes are not taking place. The venues have been very successful because it is now possible to conduct lectures with a tightly integrated practical component, as the equipment is readily at hand for each of the students. These multi-use workstations allow for far more flexible use of the venues to support the presentation of a wide variety of subjects and teaching styles.

# 3. DEEES PROGRAMMES STRUCTURE

## 3.1 UNDERGRADUATE PROGRAMME

The structure of the four-year programme in Electrical and Electronic Engineering is presented in the table below. The programme comprises the following:

- A core of basic sciences and mathematics modules/courses that are mainly offered in the first five semesters of the programme;
- A component addressing the cross-field outcomes in terms of SAQA and ECSA requirements;
- A selection of courses in the fields of electrical and electronic engineering intended to provide both breadth and depth to the programme; and
- A number of courses in complementary studies, which aim to develop the student in such a manner that he/she can make a positive contribution to society, the economy and his/her future employer.

| First Year | | | |
|---|---|---|---|
| **Semester 1** | | **Semester 2** | |
| APM01A1 | Applied Mathematics 1A (Engineering) | APM01B1 | Applied Mathematics 1B (Engineering) |
| IINEEA1 | Introduction to Engineering Design 1A | PJCEEB1 | Project Communication 1B |
| MATENA1 | Engineering Mathematics 1A | MATENB1 | Engineering Mathematics 1B |
| PHYE01A | Engineering Physics 1A | PHYE0B1 | Engineering Physics 1B |
| CEM01A1 | Chemistry 1A | ETNEEB1 | Electrotechnics 1B |
| EEMEEA1 | Electrical Engineering Methods 1A | | |
| **Second Year** | | | |
| **Semester 1** | | **Semester 2** | |
| APM02A2 | Applied Mathematics 2A | APM02B2 | Applied Mathematics 2B |
| ETNEEA2 | Electrotechnics 2A | ETNEEB2 | Electrotechnics 2B |
| MATEAA2 | Engineering Mathematics 2A2 | MATEAB2 | Engineering Mathematics 2B2 |
| MATECA2 | Engineering Mathematics 2A1 | MATECB2 | Engineering Mathematics 2B1 |
| PHYE2A2 | Engineering Physics 2A | IEP2BB2 | Engineering Economics and Practice 2B |
| MODEEA2 | Modelling 2A | MTKEEB2 | Science of Materials 2B |
| PJEELA2 | Electrical Projects 2A | TRDMCB2 | Thermodynamics 2B |

## Third Year

| Semester 1 | | Semester 2 | |
|---|---|---|---|
| AMDEEA3 | Advanced Modelling 3A | BHSEEB3 | Control Systems 3B |
| EMNEEA3 | Electromagnetics 3A | EKAEEB3 | Electronics 3B |
| KRLEEA3 | Power Systems 3A | EEPEEB3 | Electrical Engineering Practical 3B |
| STAE0A3 | Statistics for Engineers 3A | PJBEEB3 | Project Management 3B |
| SSTEEA3 | Signals and Systems 3A | RKEEE3B | Computer Systems 3B |
| AFINSA1 | African Insights | SIGEEB3 | Signal Processing 3B |
| SIOEEA3 | Systems Engineering and Design 3A | SIOEEB3 | Systems Engineering and Design 3B |
| | | TELEEB3 | Telecommunications 3B |

## Fourth Year

| Semester 1 | | Semester 2 | |
|---|---|---|---|
| BHSEEA4 | Control Systems 4A | EMNEEB4 | Electromagnetics 4B |
| RKEEEA4 | Computer Systems 4A | EMAEEB4 | Electrical Machines 4B |
| HSEEEA4 | High Speed Electronics 4A | KRLEEB4 | Power Systems 4B |
| PWEEA4 | Power Electronics 4A | OTSEEB4 | Optical Systems 4B |
| EEPEEA4 | Electrical Engineering Practical 4A | RTIENB4 | Legal Applications in Engineering Practice 4B |
| PJEEEA4 | Project Investigation (Electrical) 4A | PJEEEB4 | Project Investigation (Electrical) 4B |
| SIGEEA4 | Signal Processing 4A | | |
| TELEEA4 | Telecommunications 4A | | |

The programme has been designed to initially give the students a broad background with depth in core electrical and electronic engineering areas of knowledge. It is tailored to progress from fundamental knowledge to increasingly complex courses that build on acquired knowledge and skills. This learning process puts the graduate in a position eventually to undertake a programme of self-study, which is critical to the continued development as they undertake a career in engineering.

As the programme progresses, the teaching methodology moves from a more broadcast based paradigm to a more resource-based paradigm focusing on analysis and synthesis skills. Students are provided with the learning and analysis skills and taught how to use knowledge-gathering tools as opposed to just being exposed to the requisite knowledge.

The programme contains project-based subjects from the second year onwards where students are required to exercise the use of knowledge-gathering tools such as books, the library, the internet etc. The students are required to use these tools to integrate knowledge and to learn certain pieces of knowledge for themselves in order to be able to complete their projects. A focus is placed on the importance of independent learning from an early stage in the programme.

## 3.2 DEPARTMENT POSTGRADUATE PROGRAMMES

The Department of Electrical and Electronic Engineering Science offers multidisciplinary postgraduate programmes from heavy to light current, including smart grid, artificial intelligence, micro-technology, putting our students in the front line of the Fourth Industrial Revolution (4IR) leadership. A comprehensive range of postgraduate programmes of master's and doctoral degrees, by research and coursework, are offered. All postgraduate programmes are offered in English. Following are brief descriptions of the offered programmes.

### 3.2.1 Master's and doctoral degrees by research dissertation (RD)

The purpose of the qualification is to develop an engineer with advanced abilities in applying fundamental engineering sciences, design and synthesis, and related principles independently to specific problems of society at large. One of the main objectives in this process is to develop an advanced capability to conduct fundamental engineering research of an original nature. It also promotes a lifelong learning approach and an aptitude for training other students in similar fields. Applicants should identify and communicate with a potential academic supervisor, before applying. There are a number of research groups within the Department. Every academic staff member falls within one of these groups. The following table details the various research groups within the Department.

| Research Group | Research Description |
|---|---|
| Control/Power Research group | The group studies advanced control theory and apply the theory into applications: big data analysis, renewable energy and artificial intelligence. |
| Control and Dynamics Research Group | The use of control and optimisation to improve the performance of engineering systems. |
| Group for Electric Energy Processing (GEEP) | Electric energy processing, power electronics, machine control, power systems, electromagnetic compatibility. |
| Centre for Cyber Physical – Food, Energy & Water Systems (CCP-FEWSs) | Development of systems and technologies that will lead to sustainable management of food, energy and water resources. |
| Centre for Telecommunications | Telecommunication, error correction, power-line communication and network coding. |

| | |
|---|---|
| Centre for Smart Systems | Smart communications systems, smart grid and smart homes. |
| Centre for Collaborative Digital Networks – Liquid Telecom | Collaborative digital networks and digital innovation: internet of things, software defined networks, artificial intelligence and serious games. |
| Smart Cities Research Group | Demand-side management and renewable energy. |
| TELKOM Centre of Excellence | The research of optical fibre systems and IOT systems for the advancement of society. |

### 3.2.2 Master's degree in Micro- and Nanoelectronic by coursework

The purpose of the Master of Micro- and Nanoelectronic Engineering programme is to develop engineers with advanced abilities in applying fundamental microelectronics within multi- and cross-disciplinary environments of today's workplace. In addition to being able to respond to complex problems and provide solutions to challenges experienced in the field of integrated circuit (IC) and systems on package (SoP) design, the programme will promote and develop the capability to perform independent research, investigate IC nanophenomena from scientific principles and implement outcomes to improve microelectronic designs.

The proposed curriculum is designed to provide advanced knowledge in areas such as analogue, digital and mixed-signal electronic design, RF, Mm-Wave and communications engineering, physics of semiconductor materials, design for testability, and microelectronic processes. Curriculum is designed to assist students in acquiring advanced computer skills, including the excessive use of online resources and electronic design automation (EDA) tools. The degree includes a minor dissertation, thus promoting research and independent learning from the candidates.

### 3.2.3 Master's degree in Systems Engineering by coursework

The Master of Systems Engineering programme strives to develop professionals with advanced abilities in applying fundamental systems engineering sciences and related interdisciplinary principles enabling them to contribute as advanced systems engineers.

The Master of Systems Engineering Programme focuses on the development of professionals for system engineering leadership roles in engineering and related technology fields.

The master's degree offers advanced capability to conduct fundamental independent systems engineering research, the ability to apply research tools and techniques on systems engineering problems in the real world, advanced knowledge and skills to integrate engineering and systems engineering principles to solve complex problems, and the skills to conduct systems engineering activities, such as systems design, planning, research and problem solution.

# 4. DEPARTMENT ACTIVITIES AND COMMUNITY ENGAGEMENT

## 4.1 THE GWAKWANI PROJECT

In celebrating Human Rights Day, the UJ School of Electrical and Electronic Engineering's 19-member team spent the long weekend in Gwakwani, Limpopo, as part of a two-phase community electrification project. The Gwakwani Project is focused on empowering a 'forgotten village' with access to the world through electrification.

The head of School, Prof Johan Meyer, said: "In celebrating 20 years of democracy and 10 years of a merged UJ identity, Project Gwakwani is symbolic of transformation, community engagement, active research, innovation, technology transfer, collaborative partnerships, responsible and responsive institutional citizenship. The project is registered with the Department of Community Engagement, includes the support of non-UJ volunteers, Mutale District Mayor, local councillors, Venda Chief and residents of Gwakwani. The three-year project is finally coming to fruition and for this we are grateful to our sponsors and project members for their commitment."


For more information visit: **www.researchconnect.co.za**, **http://tiny.cc/z8nqsz**, **http://tiny.cc/dlpqsz**, **http://bit.ly/2MkJegF**

## 4.2 THE ORANGE FARM ISIBONISO PRIMARY SCHOOL PROJECT

The Isiboniso Primary School is in Orange Farm township, which is located approximately 45 km from Johannesburg in the Gauteng province of South Africa. Although it is one of the youngest townships in South Africa, with the original inhabitants, laid-off farm workers, it is regarded as one of the most underprivileged villages in the country. Schneider Electric and the UJ Electrical Engineering School jointly brought power the Isiboniso Primary School. The school functioned without any government assistance and very little support from parents. It was privately funded through the owner, Mr Solly Mkhabela. The school does not have any form of electricity and the UJ School of Electrical Engineering, led by Prof Johan Meyer, Head of the School and an associate professor at the Department of Electrical and Electronic Engineering Science, installed two separate solar installations in the Isiboniso Primary School. One was a 12V system that powered all the lights in the classrooms. The second one was a 220V installation that supplied power to the admin offices for printers, computers etc.


For more information visit: **http://tiny.cc/5tqrsz**

## 4.3 COVID-19 VENTILATOR

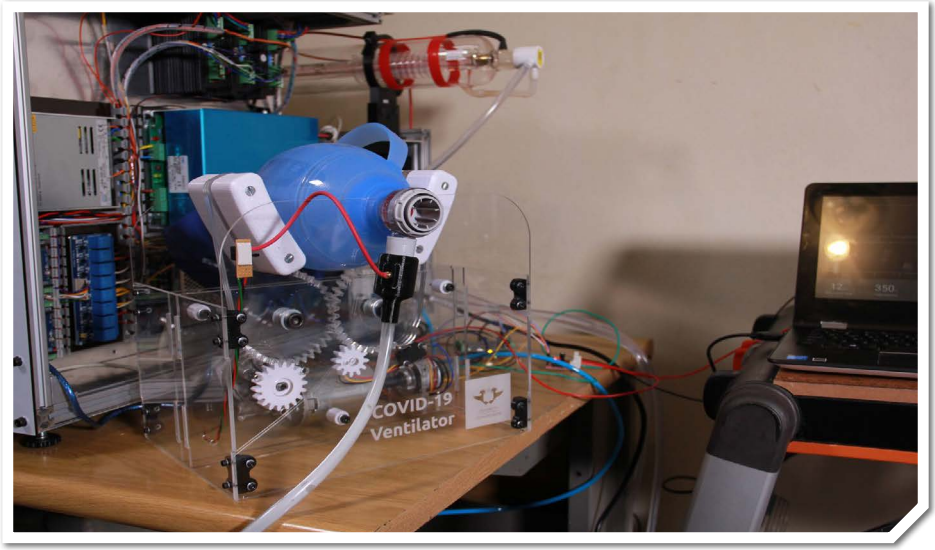
The University of Johannesburg's (UJ) Open-source Ventilator Project was conceived during the national lockdown period under Level 5 restrictions. Faced with a looming pandemic that had spread throughout the world, and a shortage of ventilators, both in South Africa and world-wide, researchers at the University teamed up to leverage open-source designs from around the world to build a low-cost ventilator for the local market. Using Fourth Industrial Revolution (4IR) technologies, like rapid prototyping, a conceptual model was designed and built in only two weeks, despite the difficulties in procuring materials due to the economic restrictions imposed at the time. Using advanced control algorithms, the ventilator was not only able to perform invasive ventilation, but could also provide assistive breathing similar to the Synchronous Intermittent Mandatory Ventilation (SIMV) modes on high-end commercial systems.

Following the successful development of the ventilator, a UJ-led consortium of universities from around the country applied to MerSETA for a grant to develop capacity in local universities to train clinical engineers and continue the development of a locally developed and produced medical grade ventilator. The subsequent awarding of a R30 million grant from MerSETA is testament to the quality and ingenuity demonstrated by the University researchers during this time.

Following the successful testing of the prototype, the University will be releasing the designs of this ventilator as an open-source project, so that anyone, from anywhere in the world with access to local manufacturing capabilities can build and deploy sophisticated

ventilator systems within their local communities. In this way, the University can give back to society, striving towards their mission of inspiring its community to transform and serve humanity through innovation and the collaborative pursuit of knowledge.

Dr Deon Sabatta, Senior Lecturer at the Department of Electrical and Electronic Engineering Science, was one of the first South African academics to develop a low-cost ventilator prototype, which can assist patients facing imminent respiratory failure. He gave practical meaning to the old adage – necessity is the mother of invention.




You can watch the story here — **https://youtu.be/0R_BtDySHg4**

## 4.4 SOLAR CAR

The University of Johannesburg's (UJ) Solar Car Project was highly commended by the South African National Energy Association (SANEA) at their recent awards ceremony.

The Solar Car Project promotes the development of sustainable engineering design, efficient energy use, environmental awareness and innovation. Students designed and built solar powered vehicles with the goal of crossing the South African countryside in a 5 000 km endurance race. The Solar Car Project is one of UJ's Resolution Circle's projects. Resolution Circle is an independent commercial business, 100% owned by UJ. This innovation ecosystem is a technology commercialisation and incubation platform that delivers workplace ready employees to industry. The majority of UJ's Solar Car Project team is employed by Resolution Circle and they make use of Resolution Circle's prototyping facilities. Building the UJ Solar Car has provided an opportunity for industry

to collaborate with UJ on developing and showcasing green technology. The UJ Solar Car Project includes a network of 22 partners representing government, industry and SMMEs. This partnership offers engineering, technology and industrial design students the opportunity to become acquainted with the challenges facing industry leaders. This initiative produces graduates who are well equipped to deal with the many challenges in energy innovation.


For more information visit: **http://tiny.cc/e9nqsz** and **Facebook.com/UJSolarCar**

## 4.5 SHELL ECO MARATHON

Shell, in partnership with the University of Johannesburg's School of Electrical and Electronic Engineering, hosts the Shell Eco Marathon challenge. This is a challenge where students compete in designing and building energy efficient cars. It is a platform that encourages energy conservation, collaboration and innovation. It is also a festival of new technology where bright energy ideas are explored. This annual event was hosted in South Africa for the first time in 2014. It has since evolved and now attracts teams from the continent, including Botswana, Namibia, Nigeria and Zambia.

This event stems from our call for collaboration to help find more and cleaner energy solutions across the world. Shell recognises that the size and complexity of the global energy challenge requires collaboration. We believe that by working together, we can transform lives, bringing more and cleaner energy to communities everywhere.


For more information visit: **http://tiny.cc/3mpqsz** and **http://tiny.cc/wmpqsz**

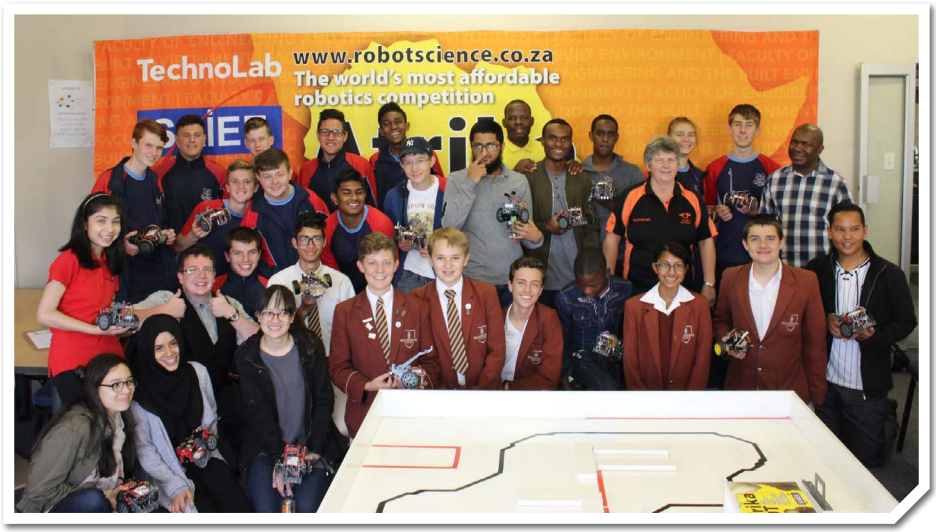
## 4.6 TECHNOLAB

The Technolab was established in 1995 to encourage the youth of South Africa to explore and discover Engineering Technology by participating in Science and Technology activities in order to stimulate innovative thinking and creativity to produce solutions to technical challenges. Technolab plays a major role in promoting the Faculty of Engineering and the

Built Environment, the School of Electrical Engineering and the Department of Electrical and Electronic Engineering Science at the University of Johannesburg as the preferred institution for engineering studies.

The mission of Technolab is to respond to the UJ strategic thrusts by promoting and supporting technology, technology transfer, promoting the UJ brand and the institution's fitness for purpose by:

- Exposing young people to a technological environment, knowledge and skills.
- Participate in interactive and informative community programmes.
- Actively represent UJ and the Faculty of Engineering and the Built Environment in the surrounding community.




For more information visit: **http://tiny.cc/g9rtsz**, **http://tiny.cc/y9rtsz** and **http://tiny.cc/c9rtsz**

# 5. STUDENT ELECTRICAL ENGINEERING SOCIETY (SEES)

The Student Electrical Engineering Society (SEES) is a student society that seeks to promote collaboration, academic excellence and balance among its members and the society. SEES is open to all DEEES (Department of Electrical and Electronic Engineering Sciences) students at the University of Johannesburg. This Society is the voice of every DEEES student and the channel between all students and departmental administrators.

Be part of a family that cares for you. We have a mentor-mentee programme specifically for first-year students, which will assist the first-year electrical and electronic students to adjust and cope to the new life they are going to be exposed to, as it may be challenging to make adjustments from high school to tertiary level. Whether you are struggling with time management or can't seem to juggle your modules around, SEES is there for you.

As a society we have created a platform for DEEES students to share hobbies, interests, opinions and visions among ourselves and the Department management at large. Now you know where to go to when you need to be heard and voice out your concerns. We are not a society without you!!!

# 6. ADMISSION REQUIREMENTS

## 6.1 UNDERGRADUATES ENROLMENT

An Admission Point Score (APS), explained below, has been developed for the National Senior Certificate (NSC) and the Independent Examinations Board (IEB) based on the Achievement Rating of each subject. The total APS is the sum of the achievement ratings of the six school subjects. Life Orientation is not counted in the calculation of the APS. More details are in the link at the end of this booklet.

## 6.2 POSTGRADUATES ENROLMENT

Approved degrees from accredited programmes within the electrical and electronic engineering or related fields at the levels of bachelor's, honours, master's degree or equivalent. Research topics must be accepted and approved by the supervisors in the Department in the case of a research dissertation.

# 7. EMPLOYMENT OPPORTUNITIES

Our programmes prepare our students for professional careers in industry, academia and research. Employment opportunities exist at government institutions, universities, research institutes, banks and the private sector in general.

# 8. GENERAL INFORMATION

## LINKS:

- **University of Johannesburg:** https://www.uj.ac.za
- **Faculty of Engineering and the Built Environment:** https://www.uj.ac.za/faculties/febe
- **Department staff details:** http://tiny.cc/0eqpsz
- **Students society:** http://tiny.cc/idussz
- **Undergraduate yearbook:** http://tiny.cc/7t2usz
- **Postgraduate programmes:** http://tiny.cc/2fqpsz
- **MEng in Micro-Nanoelectronic:** http://tiny.cc/hgqpsz **and** http://tiny.cc/9gqpsz
- **MEng in Systems Engineering:** http://tiny.cc/mxpqsz
- **Application:** www.uj.ac.za/apply

## CONTACT DETAILS:

- Head of Department: Prof Khmaies Ouahada | kouahada@uj.ac.za, Tel: 011 559 2213
- Department Academic Secretary: Mrs Roana Mudzunga | roanat@uj.ac.za, Tel: 011 559 2147
- Department Research Secretary: Ms Mpho Mabolabola | mphom@uj.ac.za, Tel: 011 559 4743

**Join us and join the success**
http://tiny.cc/6npqsz

**Faculty of Engineering and the Built Environment**
Department of Electrical and Electronic Engineering Science

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