DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

www.up.ac.za/industrial-and-systems-engineering

KEY RESEARCH IMPACT

EBIT's Department of Industrial and Systems Engineering works towards the integration of contributions from all engineering disciplines into a functional and cost-effective product by using systems knowledge and understanding. It focuses on supply chain management, enterprise engineering and optimisation, and collaborates with the Centre for Transport Development.

RESEARCH OPPORTUNITIES

- Supply chain design methodologies
- Supply chain modelling and optimisation
- Intelligent logistics
- Humanitarian logistics
- Reverse supply chains
- Enterprise engineering
- Transportation development
- Large-scale, agent-based transportation modelling
- Commercial vehicle behaviour and risky driver behaviour
- Waste collection optimisation
- Data analytics
- Reliability engineering

RESEARCH PRIDE

Research chairs and entities

- Centre for Transport Development

South African National Research Foundation (NRF)-rated researchers

- Prof VSS Yadavalli (C1 NRF-rating)
- Prof JW Joubert (C2 NRF-rating)
- Prof M de Vries (C3 NRF-rating)
- Dr O Adetunji (C3 NRF-rating)

CAREER PATHWAYS

Qualified industrial and systems engineers can register as professional engineers (Pr. Eng.) after obtaining the required industry exposure. In addition to occupying highly satisfying positions, professional engineers can also undertake consultation work. Honours and master's degree programmes in the Department allow postgraduate students to obtain specialised knowledge in their chosen field, which will benefit them in their careers in industry. For those interested in an academic career, a PhD degree from the Department is an invaluable asset.

POSTGRADUATE DEGREE PROGRAMMES

- BEngHons Industrial Engineering
- BScHons Applied Science Industrial Systems
- MEng Industrial Engineering
- MSc Applied Science Industrial Systems
- PhD Industrial Engineering
- PhD Industrial Systems

Join the University of Pretoria's Faculty of Engineering, Built Environment and Information Technology and join a world-class research institution.

THE POSTGRADUATE INDUSTRIAL AND SYSTEMS ENGINEER

Industrial and systems engineers are planners, who determine what equipment is appropriate, where it should be located, how many of each type of equipment is needed, which technology should be used to produce how much of which product, when, by whom, and how it should be transported, which product is required by the customer, where and how large the market for the product is, what quality is acceptable, from where should the raw materials be acquired, what is an acceptable price, how and in what quantities should the product be stored, how should it be financed and how often and in what manner should equipment be maintained. They combine all the parts of a problem or a proposed solution and also all the contributions of the other engineers, scientists and commercial people into one final working entity.

As such, the industrial and systems engineer is one of the most important links in the productivity chain through which an improvement in the economic growth rate and thus the standard of living of the people of a country may be ensured, not only in difficult economic circumstances, but also during times of prosperity. Industrial and systems engineers therefore have a specific responsibility to contribute to the creation of wealth and the economic wellbeing of the community.

As a qualified industrial and systems engineer, you have the opportunity to create employment opportunities for yourself and others, or participate in industrial engineering activities in a wide range of sectors. This is possible because industrial and systems engineers bridge the gap between the technology-driven design engineer and the profit-motivated manager.

A postgraduate qualification in industrial and systems engineering can develop your ability to identify opportunities to integrate the contributions of various specialists, identify and adapt appropriate technology, and expand your global perspective. In this way, new processes and technology may be developed to solve problems and handle situations that may, at present, be unknown.

Your enhanced technological training and knowledge of economics, as well as your commitment to higher productivity and profitability, can help to bring the realities of the business world to the attention of all the other engineering disciplines. In this way, you will be equipped to exploit new employment opportunities in sectors that show significant growth. You have the ability to think globally and see the overall picture of any problem situation. Empower yourself to solve problems to the best of your ability.

Never stop improving systems and processes. Take advantage of your wide background to integrate all the different technologies and concepts from the various other disciplines into new applications. As an industrial and systems engineer with a postgraduate qualification, you will be in the position to apply all the available mathematical techniques and models not only to improve the systems that you are responsible for, but to enable the best possible solution.

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