Careers and Qualifications in the College of Science, Engineering and Technology
Unisa Science Campus and Laboratories

The Unisa Science Campus offers state-of-the-art laboratories and high-end equipment, thereby advancing science education and research at a national level. It contains 12 buildings, a library, two auditoriums and a large study area.

The new laboratories are for teaching and learning and research purposes. All the laboratories are designed according to the standard equipment used universally. The equipment/instruments that are required in the newly built laboratories, in terms of the laboratory project, will enable training of both undergraduate and postgraduate students in scarce skills areas, hosting of international scholars, and increased collaborative activities.

According to the Vice-Principal, Prof Mandla Makhanya, these facilities support Unisa as a premier university – in South Africa, across continent, and as one of the mega universities worldwide – to play the more significant role in terms of the sciences. "The university will now be able to create an environment that truly stimulates research and innovation; supports researchers and scientists, and meets the educational and training needs of its distance learning students, at both undergraduate and postgraduate levels," he said. "In this way the university’s beneficial capacity is enhanced and extended as a resource to students, scientists and researchers alike."
The School of Science, well staffed with researchers and educators in the natural sciences, offers undergraduate and postgraduate degrees in Mathematics, Physics, Chemistry and Statistics. Our strength lies in our commitment to promote scientific knowledge through excellence and innovation in research and the teaching of science. Our continued efforts to provide innovative student support are driven by our college’s vision to be accessible, enabling and responsive.
What is a chemist?
A chemist is a scientist trained in the study of chemistry. Chemists study the composition of matter and its properties such as density and acidity. They carefully describe the properties they study in terms of quantities, with detail on the level of molecules and their component atoms. Chemists carefully measure substance proportions, reaction rates and other chemical properties.

Chemists use this knowledge to learn the composition, and properties of unfamiliar substances, as well as to reproduce and synthesise large quantities of useful, naturally occurring substances and create new artificial substances and useful processes. They may specialise in any number of subdisciplines of chemistry. Materials scientists and metallurgists share much of the same education and skills with chemists. The work of chemists is often related to the work of chemical engineers, who are primarily concerned with the proper design, construction and evaluation of the most cost-effective large-scale chemical plants and work closely with industrial chemists on the development of new processes and methods for the commercial-scale manufacture of chemicals and related products.

What do chemists do?
Chemistry is the study of chemicals and matter, and people whose careers are focused on this field are called chemists. These professionals study matter on the atomic and molecular levels in order to understand how elements join together to form different substances. They also measure proportions, reaction rates and various other properties of substances in order to understand more about those substances. The term is also used in the United Kingdom and some other places to refer to what a person in the United States would call a pharmacist.

Where do chemists work?
Industry
Government laboratories
Universities
High schools or community colleges
Clinical laboratories

Chemistry is the study of chemicals and matter, and people whose careers are focused on this field are called chemists.
What is a mathematician?
A mathematician is a person with an extensive knowledge of mathematics who uses this knowledge in their work, typically to solve mathematical problems. Mathematics is concerned with numbers, data collection, quantity, structure, space and change.

What do mathematicians do?
Mathematicians involved with solving problems outside of pure mathematics are called applied mathematicians. Applied mathematicians are mathematical scientists who, with their specialised knowledge and professional methodology, approach many of the imposing problems presented in related scientific fields. With professional focus on a wide variety of problems, theoretical systems and localised constructs, applied mathematicians work regularly in the study and formulation of mathematical models. The discipline of applied mathematics concerns itself with mathematical methods that are typically used in science, engineering, business and industry; thus applied mathematics is a mathematical science with specialised knowledge. The term ‘applied mathematics’ also describes the professional speciality in which mathematicians work on problems, often concrete but sometimes abstract. As professionals focus on problem solving, applied mathematicians look into the formulation, study and use of mathematical models in science, engineering, business and other areas of mathematical practice.

Where do mathematicians work?
Animated films
Astronomy and space exploration
Climate study
Medicine
National security
Robotics
Universities and Banks

Mathematicians involved with solving problems outside of pure mathematics are called applied mathematicians.
What is a physicist?
A physicist is a scientist who does research in physics. Physicists study a wide range of physical phenomena in many branches of physics spanning all lengths: these range from sub-atomic particles of which all ordinary matter is made (particle physics) to the behaviour of the material universe as a whole.

What do physicists do?
Physicists explore and identify basic principles governing the structure and behaviour of matter, the generation and transfer of energy, and the interaction of matter and energy. Some physicists use these principles in theoretical areas, such as the nature of time and the origin of the universe, while others work in practical areas such as the development of advanced materials, electronic and optical devices and medical equipment.

Physicists design and perform experiments with lasers, cyclotrons, telescopes, mass spectrometers and other equipment. Based on observations and analysis, they attempt to discover the laws that describe the forces of nature, such as gravity, electromagnetism and nuclear interactions.

They also find ways to apply physical laws and theories to problems in nuclear energy, electronics, optics, materials, communications, aerospace technology and medical instrumentation.

Where do physicists work?
Research Institutions
Universities
Industry laboratories
Government National Security Laboratories
Banks

Physicists design and perform experiments with lasers, cyclotrons, telescopes, mass spectrometers and other equipment.
What is a statistician?
Statistics is the study of the collection, organisation, analysis, interpretation and presentation of data. It deals with all aspects of this, including the planning of data collection in terms of the design of surveys and experiments. A statistician is someone who is particularly well versed in the ways of thinking necessary for the successful application of statistical methods. Such people have often gained experience through working in any of a wide number of fields. There is also a discipline called mathematical statistics that studies statistics mathematically.

What do statisticians do?
The world is becoming quantitative. More and more professions, from the everyday to the exotic, depend on data and numerical reasoning. Data are not just numbers, but numbers that carry information about a specific setting and need to be interpreted in that setting. With the growth in the use of data comes a growing demand for the services of statisticians, who are experts in the following:
- Producing trustworthy data
- Analysing data to make their meaning clear
- Drawing practical conclusions from data

Where do statisticians work?
Medicine
Industry
Government surveys
Market research
Etc.

Data are not just numbers, but numbers that carry information about a specific setting and need to be interpreted in that setting.
QUALIFICATIONS IN THE SCHOOL OF SCIENCE

Bachelor’s
Bachelor of Science in Mathematical and Statistical Science:
Applied Mathematics Stream
Mathematics Stream
Environmental Statistics Stream
Mathematical Modelling Stream
Mathematical Statistics Stream
Statistical Decision Science Stream
Statistics for Management Stream

Bachelor of Science Natural Sciences
Astronomy Stream
Chemistry and Physics Stream
Chemistry and Microbiology Stream
Chemistry and Mathematics Stream
Chemistry and Physiology Stream
Physics and Computer Science Stream
Physics Stream

Bachelor of Science
Applied Mathematics and Computer Science Stream
Applied Mathematics and Physics Stream
Applied Mathematics and Statistics Stream
Chemistry and Applied Mathematics Stream
Chemistry and Physics Stream
Chemistry and Statistics Stream
Chemistry and Computer Science Stream
Chemistry and Information Systems Stream
Mathematics and Chemistry Stream
Mathematics and Applied Mathematics Stream
Mathematics and Physics Stream
Mathematics and Statistics Stream
Mathematics and Computer Science Stream
Mathematics and Information Systems Stream
Statistics and Physics Stream
Honours Degrees
Bachelor of Commerce Honours
Statistics
Bachelor of Science Honours
Physics
Chemistry
Astronomy
Applied Mathematics
Mathematics
Statistics

Admission requirements
Please refer to the MyChoice brochure or visit www.unisa.ac.za/cset for admission requirements.

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Our continued efforts to provide innovative student support are driven by our College’s vision to be accessible, enabling and responsive.
School of Engineering

The School of Engineering offers National Diploma and degree courses in engineering through open distance learning (ODL) to students who are interested in becoming professional technicians and technologists in a number of engineering disciplines. These disciplines include civil, chemical, electrical, mechanical, industrial and mining engineering. National Diplomas in paper and pulp as well as mine surveying are also available. Join us as a student to develop yourself as a professional.

It is important to note that the National Diploma and some BTech courses have practical modules that have residential requirements (on campus for a number of days) as well as work-integrated learning that requires students to be placed in industry for up to a year.
Department of Civil and Chemical Engineering

When one considers the rapid advancement and changes in the physical environments, one can’t but acknowledge, amongst others, the civil engineers who are closely involved with the design, construction and maintenance of roads, buildings, bridges and dams. Chemical engineers, on the other hand are widely employed across many sectors including chemicals, explosives, coal and gas, pharmaceuticals.

CIVIL ENGINEERING

Careers in Civil Engineering

Are you a person with the following qualities?
• A creative, yet logical thinker
• A problem solver
• Systematic in your approach to problems
• Take on challenges
• A good decision maker
• Improve the quality of community life
• To work in an office and onsite

If your answer is YES to these questions then you should consider a career in civil engineering!

Chemical engineers rely on their knowledge of mathematics and science particularly chemistry to overcome technical problems safely and economically.
What is civil engineering?
Civil engineering is the art and science of planning, design and construction of infrastructure for society, through critical and creative thinking on work that is functional, economical, aesthetically pleasing and environmentally sustainable.

What do civil engineers and technologists do and how?
The civil engineering work is multidisciplinary as it encompasses the planning, design and construction of projects. The work requires a vast knowledge and understanding of the behaviour, quality, properties and application of engineering materials. Generally, any civil engineering work and products require supervision and managerial skills, and therefore knowledge of non-technical matters such as economics, finance, legal and labour affairs.

The civil engineer will be responsible individually and as part of a team for one or more of the following aspects: Planning, investigations, design, detailing, analysis, bill of quantities, cost estimates, specifications, tender documentation project management, work inspections, testing of materials and payment certificates.

Where do civil engineers and technologists work?
- In the public sector, whether at municipalities or provincial or national government departments
- In the private sector as consulting engineers and contractors

Specialisation options offered at Unisa civil engineering:

**Water engineering:**
- Dams
- Pipelines and reticulations
- Reservoirs
- Water purification works
- Waste water treatment works

**Structural engineering:**
- Concrete structures
- Steel structures
- Masonry structures
- Timber structures

**Construction management:**
- Management of the construction of all types of civil engineering work

**Urban engineering:**
- Development and maintenance of all municipal facilities

**Environmental engineering:**
- Environmental impact studies of all civil engineering work and products on the environment
Are you a person with the following qualities?
• A creative, yet logical thinker
• A problem solver
• Systematic in your approach to problems
• Likes to take on challenges
• A good decision maker

If your answer is YES to these questions then you should consider a career in chemical engineering!

Chemical engineering is concerned with industrial processes for the conversion of raw materials into products with a higher economic or social value through physical and chemical changes. Chemical engineers also play a key role in the conservation and protection of the environment. They enjoy a wide variety of employment opportunities compared to other engineering disciplines. There is a shortage of chemical engineers and technologists worldwide, and salaries have increased in line with demand.

What do chemical engineers and technologists do and how?
Chemical engineers work in manufacturing, pharmaceuticals, healthcare, design and construction, pulp and paper, petrochemicals, food processing, specialty chemicals, microelectronics, electronic and advanced materials, polymers, business services, biotechnology and the environmental health and safety industries, among others.

Chemical engineers rely on their knowledge of mathematics and science, particularly chemistry, to overcome technical problems safely and economically. And, of course, they draw upon and apply their engineering knowledge to solve any technical challenges they encounter. Their expertise is also applied in the areas of law, education, publishing, finance and medicine, as well as in many other fields that require technical training.

They also construct the synthetic fibres that make our clothes more comfortable and water resistant; they develop methods to mass-produce drugs, making them more affordable and they create safer, more efficient methods of refining petroleum products, making energy and chemical sources more productive and cost-effective.
Where do chemical engineers and technologists work?
Chemical engineers are widely employed in the following employment sectors:
- Chemicals
- Metallurgical
- Oil, coal and gas
- Pharmaceuticals
- Petrochemicals
- Plastics and fibres
- Explosives
- Agriculture
- Food processing
- Effluent treatment
- Water treatment
- Power generation
- Fertiliser manufacturing
- Cement-making
- Papermaking
- Education
- Government
- Research and consulting

QUALIFICATIONS IN CIVIL AND CHEMICAL ENGINEERING

Diplomas
Civil Engineering
National Diploma: Engineering; Civil National Diploma:
• Construction Management
• Environmental Engineering
• Structural
• Urban Engineering
• Water

Chemical Engineering
Diploma: Engineering: Chemical National Diploma:
Pulp and Paper Technology
• Construction Management
• Environmental Engineering
• Structural
• Urban Engineering
• Water

Admission requirements
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DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING

MECHANICAL ENGINEERING

Are you a person with the following qualities?
• An aptitude for mathematics and science who also enjoys working with people
• An analytical mind that enjoys exploring possible improvements to existing systems coupled with the ability for creative and practical work
• An interest in learning about the machines that bring convenience and excitement to our lives, and in discovering the secrets behind control systems such as the cruise control of an airplane

If your answer is YES to these questions then you should consider a career in mechanical engineering!

What is mechanical engineering?
Mechanical Engineering is concerned with the design, development, installation, operation and maintenance of just about anything that has movable parts. It involves the production, transmission, and use of mechanical power. Everyday mechanical engineering work involves a wide range of activities and challenges.

A good example of the involvement of mechanical engineering practitioners may be found in the design and planning of new products. The mechanical engineering team designs better products as well as facilities for manufacturing these products. The scope of projects could include capital equipment, market research, workshops, production plants and even mining. The technician must ensure that the design elements of the projects are compatible and that the capital, plant, manpower and raw materials are optimally employed, resulting in feasible and economically viable projects.

What do mechanical engineers do and how?
Mechanical engineers specialise in designing systems and machines for the economic use of natural and human resources. The emphasis is on the design, production and maintenance of improved or more efficient systems. Owing to the scope and nature of engineering assignments, which can be very large and complex, engineering practitioners normally work in teams to effectively and efficiently complete projects.

The Mechanical engineering teams concentrate on the following branches of mechanical engineering:
• Quality: the quality of the products or services provided must exceed the expectations and needs of the consumer.
• Design: products must be designed to ensure maximum profits through the product lifecycle. This includes all market aspects from the start of the research phase to proper phasing out of products and manufacturing equipment.
• Manufacturing: manufacturing processes and systems, production planning, factory layout, ergonomics and reduction of waste must be optimised to limit expenses to a minimum.
• Maintenance: systems and equipment must be maintained to perform at their optimal level. Products must be developed so that they can be economically maintained through their lifecycle.
Where do mechanical engineers work?
The breadth of the mechanical engineering discipline allows students a variety of career options beyond some of the industries listed below. Regardless of the particular path they envision for themselves after they graduate, their education will have provided them with the creative thinking that allows them to design an exciting product or system, the analytical tools to achieve their design goals, the ability to overcome all constraints, and the teamwork needed to design, market, and produce a system.

These valuable skills could also launch a career in medicine, law, consulting, management, banking, and finance.
- Aerospace
- Agriculture
- Automation
- Banks
- Biotechnology
- Computers and electronics
- Consulting
- Education
- Energy conversion
- Environmental control
- Systems
- Government
- Mass transfer
- Hospitals
- Material Science
- Management
- Manufacturing
- Mechanical systems (MEMS)
- Mining
- Motor industry
- Mechanics
- Noise control acoustics
- Power generation
- Rail transportation
- Research and Development
- Textile
- Tribology

Mechanical Engineering is concerned with the design, development, installation, operation and maintenance of just about anything that has movable parts. It involves the production, transmission, and use of mechanical power.
Are you a person with the following qualities?
• An aptitude for mathematics and science who also enjoys working with people
• An analytical mind that enjoys exploring possible improvements to existing systems coupled with the ability for creative and practical work
• Enjoys business transactions and the analysis of spending patterns and preferences

If your answer is YES to these questions then you should consider a career in Industrial Engineering!

What is industrial engineering?
Industrial engineering is concerned with the design, improvement and installation of integrated systems of people, materials, information, equipment and energy. It draws upon specialised knowledge and skill in the mathematical, physical, and social sciences together with the principles and methods of engineering analysis and design, to specify, predict, and evaluate the results to be obtained from such system.

The history of Industrial Engineering is rooted in the application of these core disciplines to the analysis and design of the manufacturing enterprise. However, Industrial Engineering problems are found in retail, distribution and supply chain, banking, healthcare, and many other environments. Industrial Engineering is almost universal in its applicability.

Industrial Engineers concentrate on the following branches of Industrial Engineering:
• Quality: the quality of the system and processes, as well as the quality of the products or services provided.
• Manufacturing: manufacturing processes and systems production planning, factory layout, ergonomics and reduction of waste.
• Logistics: transport networks, movement of material, scheduling, project management, etc.

And how?
Everyday industrial engineering work involves a wide range of activities and challenges. A good example of the involvement of industrial engineering practitioners may be found in the design and planning of new projects. The industrial engineering team designs more effective methods and facilities for manufacturing and services. These projects could include capital equipment, civil construction work, workshops, production plants and even mining. The technician must ensure that the design elements of the projects are compatible and that the capital, plant, manpower and raw materials are optimally employed, resulting in feasible and economically viable projects.
Where do industrial engineers and technologists work?

Industrial engineers are widely employed in the following employment sectors:

- Aerospace
- Aluminium and Steel
- Banking
- Ceramics
- Construction
- Consulting
- Education
- Electronics Assembly
- Energy
- Forestry and logging
- Government
- Insurance
- Materials Testing
- Medical Services
- Military
- Mining
- Oil, Coal and Gas
- Plastics and forming
- Retail
- Shipbuilding
- Transportation

QUALIFICATIONS IN MECHANICAL AND INDUSTRIAL ENGINEERING

Diplomas
- National Diploma: Engineering: Industrial
- National Diploma: Engineering: Mechanical
- BTech
- BTech: Engineering: Industrial
- BTech: Engineering: Mechanical

Admission requirements
Please refer to the MyChoice brochure or visit www.unisa.ac.za/cset for admission requirements.

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DEPARTMENT OF ELECTRICAL AND MINING ENGINEERING

ELECTRICAL ENGINEERING

Careers in Electrical Engineering

Are you a person with the following qualities?
• An aptitude for mathematics and science
• Enjoys working with people
• An interest in developing the ability to solve complex problems
• An analytical mind
• Enjoys exploring possible improvements to existing systems coupled with the ability for creative and practical work
• The desire to develop a professional approach to your work and conduct

If your answer is YES to these questions then you should consider a career in electrical engineering!

What is electrical engineering?
Electrical and electronic engineering are exciting and dynamic fields. Electrical engineers and technologists are responsible for the generation, transfer and conversion of electrical power, while electronic engineers and technologists are concerned with the transfer of information using radio waves, the design of electronic circuits, the design of computer systems and the development of control systems such as aircraft autopilots. These sought-after professionals can look forward to rewarding and respected careers.
What do electrical engineers and technologists do and how?
Electrical engineers and technologists are the professionals that deal with the study and application of electricity, electronics and electromagnetism. They work on the development of new and advanced products that are powered by electricity or produce electricity. Examples are projects on medical technology, gaming systems, cellular phones, robots, cars and airline navigation systems. Electrical engineering is also concerned with control systems, telecommunications and signal processing.

Where do electrical engineers and technologists work?
- Power distribution – both primary and secondary distribution
- Power generation, including co-generation and standby systems
- Lighting design and control, including both interior and exterior lighting
- Power conditioning and uninterruptible power supply
- Telecommunications
- Security and surveillance
- Fire alarm systems
- Programmable controllers
- Lighting protection
- Renewable Energy Systems

Admission requirements
Please refer to the MyChoice brochure or visit www.unisa.ac.za/cset for admission requirements.

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Electrical and Electronic Engineering are exciting and dynamic fields. Electrical engineers are responsible for the generation, transfer and conversion of electrical power.
They prepare operations and estimate the cost and duration of a project. They then decide how to safely and efficiently extract goods from viable mines. Mining engineers are involved in every step of development, from determining the best method of drilling and blasting to starting a mine and then creating the shafts, ventilation systems, mine services, haulage mechanisms and other supporting structures to allow miners to work safely. Once a mine is up and running, mining engineers supervise further development and ongoing maintenance of existing areas. They also supervise survey personnel, other engineers, scientists and technicians working on the site. They often work with geological engineers, metallurgical engineers and other engineers, and it is possible to move from one specialty to another.

What do mining engineers and technologists do and how?

Mining engineers are in charge of planning, designing, organising and supervising the development of mines and much of the related facilities, equipment and infrastructure. They are hired by mining companies to prepare for the extraction of minerals, coal or metals from underground or open-pit mines. They work for mining companies, manufacturers, government and in education. Mining engineering includes facets of geological, civil, mechanical and materials engineering. Mining engineers conduct initial surveys of the deposits in a potential area for mining to determine the economic and environmental benefits and costs of starting an operation.

They prepare operations and estimate the cost and duration of a project. They then decide how to safely and efficiently extract goods from viable mines. Mining engineers are involved in every step of development, from determining the best method of drilling and blasting to starting a mine and then creating the shafts, ventilation systems, mine services, haulage mechanisms and other supporting structures to allow miners to work safely. Once a mine is up and running, mining engineers supervise further development and ongoing maintenance of existing areas. They also supervise survey personnel, other engineers, scientists and technicians working on the site. They often work with geological engineers, metallurgical engineers and other engineers, and it is possible to move from one specialty to another.

What do mining engineers and technologists do and how?

Mining engineers are employed in both surface and underground mining operations nationally and internationally. Their work is to plan, design and manage the mineral production process in various environments. For this purpose they need to have a knowledge of geology, mining economics, management, surveying, mining methods, rock mechanics, rock-breaking techniques and environmental management. They should be knowledgeable in matters relating to electrical, mechanical and civil engineering to ensure that the mining operation is well planned and efficient. A knowledge of certain laws such as the Mine Health and Safety Act is also necessary in order to provide a safe working environment.
Mine surveying
The main objective of mine surveying is to map the workings of the mine, above and below the surface. There is constant pressure on the mining industry to reduce costs by extracting as much of the valuable product as possible while leaving unwanted material behind. The mine surveyor is involved in planning the mining operations to ensure the most cost-effective mining method to use, as well as where such mining methods should be used. They also monitor and even manage the quality and quantity of product that is extracted.

Where do mining engineers and technologists work?
Mining engineers are widely employed in the following employment sectors:
- Mining Industry
- Education
- Government
- Research and Consulting
- Financial Institutions (banks)

Diplomas
National Diploma: Mining Engineering
National Diploma: Mine Surveying

Admission requirements
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Human Computer Interaction Usability Laboratory

The School of Computing has a state-of-the-art usability laboratory. The laboratory allows the observation of human-computer interaction in an attempt to optimise user-interface designs and workflows, understanding the voice of the user, and understanding how users interact with current prototypes. Users can be systematically observed while they are actually using prototypes. Through this process, developers are able to identify issues with products, systems and websites, and match them more closely to user needs and requirements. The laboratory has eye trackers and instruments to measure psychophysiological responses.

Welcome to the School of Computing

The vision of the school is to serve students and the community through excellent open distance learning programmes, by conducting relevant and effective research and community engagement projects. The school commits itself to the achievement of academic excellence in the field of computing.

To this end, it offers various programmes ranging from undergraduate to doctoral level. In addition, the Centre for Software Engineering (CENSE) offers a number of specialised short learning programmes. Whatever your stage of education, we have the expertise to take you to the top. We are well established in the higher education market and have gained a reputation as a leader in computing.

Careers in Computing

What is information technology?

Information technology is broadly considered to encompass the use of computers and telecommunications equipment to store, retrieve, transmit and manipulate data. The term is commonly used as a synonym for computers and computer networks, but it also encompasses other information distribution technologies such as television and telephones.

The purpose of this subject is to enable qualifying students to analyse, design, develop and maintain web systems, networks, database systems, programming products and interfaces according to client requirements and to apply principled methodologies in continuously changing industrial, organisational and commercial information and communication technology environments.

What do information technology specialists do?

An information technology (IT) specialist works with computers. Job tasks can include installing and repairing hardware, maintaining databases for user applications or overseeing departments of other IT specialists. Generally, an information technology specialist has a wide range of computer abilities and works in several capacities inside an IT department.

Where do IT specialists work?

- Communication sector
- Government sector
- Private sector
What is computer science?

Computer science deals with the theoretical foundations of information and computation. It is about using computers to solve problems effectively. Our graduates have a firm grasp of software, networks, computer architecture, formal methods, algorithms and data structures, databases, distributed services, virtualisation, mobile computing and artificial intelligence. Skills learnt can be used in varied fields such as business and finance, engineering, communications and the biological, physical and earth sciences.

What do computer scientists do?

Computers are ubiquitous in modern life, in addition to high-tech machines like aircraft and medical imaging systems, everyday devices as diverse as automobiles, vending machines, refrigerators, and video game consoles now contain some type of computer. Computers are used in all sectors of the business world, from helping to design our highways and bridges to analysing farm production. The work of computer scientists involves designing and building software for all computing devices. Computer scientists should be able to solve computing problems effectively whether this involves databases, networks or even computer-related security issues. They should be able to devise new and better ways of using computers and addressing particular challenges in areas as diverse as robotics, computer vision or digital forensics.

Where do computer scientists work?

- Communications sector
- Government sector
- Private sector
- Aerospace
What is information systems?
Information systems describes the process by which organisations and people use computers to collect, process, store, analyse and distribute data. It refers to the interaction between users and technology including users’ activities that support operations, management and decision making. Skills learnt can be used in varied fields such as business and finance, engineering and communications. Information systems focuses on the business organisation (people, business processes, information and technology), whereas computer science focuses on the technology and requires more mathematical and technical skills.

What do information systems specialists do?
Solving strategic business problems by designing computer-based information systems can be an exciting and rewarding career. Information technology jobs are some of the fastest growing and highest paying jobs in management. In the modern workplace, it is imperative that technology works both effectively and reliably. Computer and information systems managers play a vital role in the implementation of technology within their organisations. They do everything from helping to construct a business plan and overseeing network security to directing Internet operations. Computer and information systems managers plan, coordinate, and direct research and facilitate the computer-related activities of companies. They help determine both technical and business goals in consultation with top management and make detailed plans for the accomplishment of these goals. This requires a strong understanding of both technology and business practices.

Where do information systems specialists work?
- Communications sector
- Government sector
- Private sector
- Aerospace

Information resource management (IRM)
In 2016 the School of Computing started offering the new qualification called the Advanced Diploma in IRM, followed by the Postgraduate Diploma in IRM, which will cover areas in the Information Technology Services Management (ITSM) field. This is a new IT field concerned with the implementation and management of quality information technology services. ITSM is a process-based approach to IT that deals with the operational concerns of IT management and service quality rather than technology development. These qualifications will also include modules that cover areas such as databases, networks, advanced software development and software project management.
Qualifications in the School of Computing

**Diplomas**

**Diploma:**
- Information Technology

**Advanced Diploma:**
- Information Resource Management

**Postgraduate Diploma:**
- Information Resource Management

**Bachelor’s degrees**

**Bachelor of Science:**
- Computing
- Information Systems
- Computer Science
- Informatics

**Bachelor of Commerce:**
- Business Informatics

**Bachelor of Science Honours:**
- Computing

**Bachelor of Commerce Honours:**
- Business Informatics

**MTech, MSc and PhD Postgraduate Degrees**
- MTech: IT
- MSc in Computing
- PhD in Computer Science
- PhD in Information Systems

**Admission requirements**
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**Contact information**

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