The Faculty of Science has a long tradition of excellence in teaching and research! If you enjoy mathematics, want to learn more about the world, care about conservation and use of our natural resources and enjoy problem solving, then the Faculty of Science at Wits is for you. The study of science and scientific research is an exciting journey into tradition, experimental observation and deduction. A science degree opens doors to diverse fields including Medical Research, Computer Science, Chemistry, Biotechnology etc. Research strength ensures that staff members keep in touch with the latest developments in their fields. This benefits both postgraduate and undergraduate students. In addition to basic research in various fields, including Mathematical Modelling, High Energy Physics, Biotechnology, Molecular Biology and Environmental Sciences, increasing effort is being devoted to applied research linked to a variety of activities in southern Africa.

Many fields of study are offered within the Bachelor of Science (BSc). The broad areas are:

**Biological and Life Sciences**
From the study of the molecular basis of life, including the biochemistry of molecules such as DNA, RNA, proteins and the molecular structure and function of the various parts of living cells to evolution and human, animal and plant behaviour.

**Mathematical Sciences**
Wits has three large schools in the area of study known as the ‘Mathematical Sciences’ and these are the School of Mathematics, the School of Computational and Applied Mathematics and the School of Statistics and Actuarial Science.

Pure Mathematics is a developing science. Mathematical Statistics and Actuarial Science are important in industrial and governmental planning and to the insurance industry. Applied Mathematics has applications in banking, finance and industry. Computer Science offers the understanding of computer hardware and software, in all their applications.

**Earth Sciences**
The Earth Sciences study the processes that shape the earth, atmosphere and the organisms that have evolved on earth. Fields of specialisation include the exploration for and the mining of minerals, the prediction of weather and earthquakes, the evolution of species through time, the state of our natural environment and how we can best manage the system.

**Physical Sciences**
From nuclear, particle, solid and liquid state physics, electricity, electronics, magnetism, optics, acoustics, heat and thermodynamics to the composition of matter (gas, liquid or solid) and of the changes that take place in it under certain conditions.

For information regarding the curriculum see page 85.

**Restricted Courses**
Certain courses in science have a limitation on student numbers for 2016. Preference is given to students who achieve excellent academic results.
PROGRAMMES OFFERED

Bachelor of Science (BSc) 3 years

The BSc programme is based on a point system. Each course carries a number of points, defined both by level and duration. You are required to complete a minimum number of science courses, based on the point value, particularly at second and third year level.

You may therefore find it useful to plan your programme based on your chosen course sets (majors).

---

THE POINT SYSTEM

To complete a BSc you need a minimum of 396 points. At least 240 points must come from 2nd and 3rd year level science courses, including 72 points from a third-year course set. The points are structured as follows.

A full course at:
- 1st year level = 36 points
- 2nd year level = 48 points
- 3rd year level = 72 points

At least one of the 3rd year level courses must be taken from the Faculty of Science.

EXAMPLE 1: Most common

4 x level 1 courses = 144 points
2 x level 2 courses = 96 points
2 x level 3 courses = 144 points

Total = 384 points

Students need to pick up 12 points at second or third year level to complete point requirements. 384 points + 12 points = 396 points

EXAMPLE 2:

3 x level 1 courses = 108 points
3 x level 2 courses = 144 points
2 x level 3 courses = 144 points

Total = 396 points

---

The following pages detail the structure of the Bachelor of Science programme and the fields of study within it. The Bachelor of Science aims to acquaint students with the basic scientific disciplines and is primarily a stepping stone. The programme develops the academic skills of exactness and clarity and an appreciation of method. An additional year of study could lead to a teaching qualification or a more specialised Honours qualification. Because the Faculty actively encourages research, many students go on to study for Master of Science and Doctoral degrees. The career diagram that appears later in this guide will give you an idea of the many and varied job opportunities open to science graduates.

Please make sure you keep this information as you need to refer to it again; for example, if you are offered a place you will be asked to indicate your proposed curriculum and course sets (major courses) on your letter of acceptance.

---

Wits fact

Earlier this year, several burrows from the collection of the Evolutionary Studies Institute (University of the Witwatersrand, Johannesburg, South Africa) were scanned at the ESRF in collaboration with experts from South Africa, Indiana University’s Department of Anthropology (USA) and the Museum of Central Australia. The scans revealed the improbable scene of these two different species lying side by side: the main occupant of the burrow, a mammal-like reptile Thrinaxodon, with a Broomistega, a primary aquatic amphibian belonging to the extinct group of Temnospondyli. The injured amphibian took advantage of this torpor state of the mammal-like reptile to crawl into the burrow to shelter and rest. Both animals were ultimately trapped and drowned by the flooding event, then miraculously preserved side by side for the last 250 million years.


Credit: ESRF V. Fernandez
The School of Animal, Plant and Environmental Sciences provides a more integrated approach to biological studies. Studies are focused at the level of living things and their interaction with the environment. Areas of specialisation include savannas and grasslands and aquatic biology, focusing on biodiversity, sustainable resources and range limitation. Ecology and behaviour of a diverse range of animals (herbivores, beetles, rodents, lizards, snakes, birds, etc.), Bioccontrol, Biodiversity, Conservation, Restoration, Ecophysiology, Systematics, Taxonomy, and Evolutionary Biology are some of the specialisations on offer. We have redesigned our courses so that we can retain important basic knowledge but have time to explore fields that are new and relevant. Training involves both field work and laboratory skills. We have a well-equipped and active museum. Courses are made up of modules which allow for flexibility and choice.

### CURRICULUM

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE DESCRIPTION</th>
<th>LIMITATION ON STUDENT NUMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL1000</td>
<td>Introductory Life Sciences I</td>
<td>450</td>
</tr>
<tr>
<td>APES2023</td>
<td>Ecology, Environment and Conservation II</td>
<td>65</td>
</tr>
<tr>
<td>APES303S</td>
<td>Ecology, Environment and Conservation III</td>
<td>50</td>
</tr>
<tr>
<td>APES2006</td>
<td>Zoology II</td>
<td>65</td>
</tr>
<tr>
<td>APES3009</td>
<td>Zoology III</td>
<td>50</td>
</tr>
<tr>
<td>APES2000</td>
<td>Plant Sciences II</td>
<td>50</td>
</tr>
<tr>
<td>APES3045</td>
<td>Plant Sciences III</td>
<td>50</td>
</tr>
</tbody>
</table>

**Majors:**

- **Plant Sciences**
- **Zoology**
- **Ecology, Environment and Conservation**

**1ST YEAR**

- Introductory Life Sciences I (BIOL1000)
- Chemistry I (CHEM1012)
- Ancillary Maths and Stats I (MATH1010)
- Complementary Life Sciences I (BIOL1006) - Recommended
- Other majors offered by the Faculty

**2ND YEAR**

- Plant Sciences II (APES2000)
- AND/OR
- Zoology II (APES2006)
- AND/OR
- Ecology, Environment and Conservation II (APES2023)

**3RD YEAR**

- Plant Sciences III (APES3045)
- AND/OR
- Zoology III (APES3009)
- AND/OR
- Ecology, Environment and Conservation III (APES3035)

---

**Wits fact**

Wits has a separate Palaeontology Institute dedicated to palaeontological research. Professor Lee Berger, a renowned palaeanthropologist from the Institute discovered and named a new species of hominid, the Australopithecus Sediba, almost two million years old, in the Cradle of Humankind World Heritage site.
The School of Molecular and Cell Biology provides excellence in teaching and research in the molecular life sciences and biotechnology. The strength of the programme lies in the comprehensive introduction to the convergence of modern molecular advances, and their application to the broad fields of medicine, agriculture and biotechnology. There is no doubt that the molecular biosciences are the science of the future evidenced by the growing number of disciplines where a molecular understanding has made a substantial impact (e.g. bioinformatics, forensics and drug design). The School boasts excellent laboratory and IT infrastructure and ongoing research strategies are benchmarked against international standards.

**Majors:**

**Biochemistry and Cell Biology**

All 3rd year majors in the School of Molecular and Cell Biology require students to obtain a pass in the integrated 2nd year courses Molecular and Cell Biology IIA (MCBG 2031) and Molecular and Cell Biology IIB (MCBG 2032) and Molecular and Cell Biology IIC (MCBG 2033) (see details below).
An actuary applies analytical, statistical and mathematical skills to financial and business problems, especially those which involve uncertain future events, such as in life insurance, general insurance, risk management, health care financing, investments, corporate finance, banking, retirement funding and social security. Actuaries help individuals and businesses to make financial sense of the future, and allow them to safeguard their future financial well-being in an ever-challenging world.

**Majors:**
- Actuarial Science
- Mathematical Statistics

### Fixed Curriculum:
- Actuarial Science

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### CURRICULUM

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
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</thead>
</table>

This fixed curriculum has a limit of 30 on student numbers for 2016.

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### CURRICULUM

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
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</thead>
</table>
Computational and Applied Mathematics (CAM) equips you to solve problems in business and industry using efficient analytical and computational techniques to optimise productivity and hence increase outputs, profits and income. Students interact with industry through the Mathematics in Industry Study Groups and the Advanced Mathematics of Finance Programme.

**Majors:**

- Computational and Applied Mathematics

**Fixed Curriculum**

- Bachelor of Science in Mathematical Sciences, and Mathematics of Finance

In recognition of the power and importance of mathematics and statistics in applications and of the need for graduates with a thorough understanding of mathematics we encourage students with an interest in and enjoyment of mathematics, to register for a curriculum that ensures a proper foundation, that is, the BSc in the field of Mathematical Sciences. Students must have proof of sufficient mathematical ability to succeed in this curriculum.

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### CURRICULUM

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE DESCRIPTION</th>
<th>LIMITATION ON STUDENT NUMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPM1000</td>
<td>Computational and Applied Mathematics</td>
<td>180</td>
</tr>
</tbody>
</table>

**This fixed curriculum has a limit of 30 on student numbers for 2016.**
Computer Science has revolutionised the way we live and work and new developments in software and hardware will continue to change the world. Computing and IT is a very wide area. At Wits, we focus on developing the leaders of the future – those who will take our industry and science further. Computer Science is the discipline of solving problems so that the solutions can be efficiently implemented on computers. The problem domains are very wide: commerce, finance, industry, mining, science, mathematics, music and entertainment.

To be a leader in Computer Science requires:
• Critical thinking
• Good mathematical abilities
• Thorough knowledge of the science of computing
• Analytic ability
• Creativity

Majors:
• Computer Science

This fixed curriculum has a limit of 30 on student numbers for 2016.

### Fixed Curriculum:

**• Bachelor of Science in the field of Applied Computing**

The BSc in the field of Applied Computing degree is a pioneer programme in Information and Communication Technology (ICT). This programme is designed to give students both a broad and deep foundation in all aspects of ICT. It is a tri Faculty initiative that links the expertise of the Schools of Computer Science, Electrical and Information Engineering along with the School of Economic and Business Sciences. Graduates will be suitable for positions in industry and commerce such as software development, software design, database programming, network analysis and design and systems analysis. A student who completes a Bachelor of Science containing the courses listed below may apply for entry to the third year of the Bachelor of Science in Engineering (Information Engineering) in the Faculty of Engineering and the Built Environment or Bachelor of Commerce with Honours in the Faculty of Commerce, Law and Management.

### CURRICULUM

<table>
<thead>
<tr>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc in the field of Computing with Mathematics</td>
<td>Computer Science I (COMS1015/16/17/18)</td>
<td>Computer Science II (COMS2000)</td>
</tr>
<tr>
<td>AND</td>
<td>Programming Languages II (COMS2001)</td>
<td>Algorithms and Artificial Intelligence III (COMS3000)</td>
</tr>
<tr>
<td>Algebra I (MATH1034)</td>
<td>Operating Systems II (COMS2001)</td>
<td>Formal Languages and Automata III (COMS3003)</td>
</tr>
<tr>
<td>Calculus I (MATH1036)</td>
<td>Applications and Analysis of Algorithms II (COMS2012)</td>
<td>Architecture and Networks II (COMS3004)</td>
</tr>
<tr>
<td>Any 2 or 3 other level I courses depending on other course sets</td>
<td>Mathematics II</td>
<td>Any other level III course depending on other course set</td>
</tr>
<tr>
<td>Computational and Applied Mathematics I (APPM1006)</td>
<td>Basic Analysis II (MATH2001)</td>
<td></td>
</tr>
<tr>
<td>Actuarial Science I (STAT1002)</td>
<td>Multivariable Calculus II (MATH2007)</td>
<td></td>
</tr>
<tr>
<td>Mathematical Statistics I (STAT1003)</td>
<td>Advanced Analysis II (MATH2016)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differential Equations (MATH2003)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Linear Algebra II (MATH2019)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abstract Mathematics III (MATH2015)</td>
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</tr>
</tbody>
</table>

| BSc in the field of Applied Computing | Electrical Circuits (ELEN2006) | Introduction to Software Engineering (ELEN3023) |
| AND | Microprocessors (ELEN2006) | AND |
| Algebra I (MATH1034) | Database Fundamentals (COMS2002) | AND |
| Calculus I (MATH1036) | Mobile Computing II (COMS2013) | Architecture and Networks III (COMS3004) |
| AND | Operating Systems (COMS2001) | AND |
| AND | Electrical Circuits (ELEN2006) | One of the Options: |
| Physics for Applied Computing I (PHYS1024) | Basic Analysis II (MATH2001) | Option 1: |
| The student shall also complete the following special requirements to the satisfaction of the Senate: Practical Programming Workshop or Vacation Work Part I. | Linear Algebra II (MATH2019) | • Electronics (ELEN2002) |
| | Multivariable Calculus II (MATH2007) | • Signals and Systems for Applied Computing (ELEN3019) |
| | Differential Equations (MATH2003) | • A Capstone Project in Electrical and Information Engineering (ELEN3021) |
| | Information Systems IIA (INFO2000) | Option 2: |
| | Information Systems IIB (INFO2001) | • Management & Application of IS (INFO2002) |
| | The student shall also complete Vacation Work Part II to the satisfaction of the Senate. | • A Capstone Project in Information Systems (INFO3003) |

### One of the Options:

| Option 2: |
| • Computer Science for Applied Computing I |
| • A Capstone Project in Computer Science |

**School of Computer Science**

5.
6. School of Mathematics

Pure Mathematics is a dynamic science. The increasing complexity of modern society means that ever more mathematicians will be needed in future.

**Majors:**
- Mathematics

**Fixed Curriculum:**
- Bachelor of Science in Mathematical Sciences

Mathematics and Languages are perhaps the cornerstone disciplines of a university.

<table>
<thead>
<tr>
<th>CURRICULUM</th>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
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</thead>
</table>

This fixed curriculum has a limit of 30 on student numbers for 2016.

<table>
<thead>
<tr>
<th>CURRICULUM</th>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
</tr>
</thead>
</table>
The School of Geography, Archaeology and Environmental Studies is one of the most productive research units at Wits. Staff members contribute regularly to local and international publications and are members of the editorial boards of many prestigious journals. The School has an excellent reputation both locally and internationally as one of the leaders in African scholarship on issues such as sustainability, climate change, urban social and environmental justice, tourism and development. We also lead in rock art studies, Paleoarchaeology, the Stone Age, pre-colonial farming and herding societies and the formation of modern cultural identities in the last five hundred years. We offer undergraduate programmes in the disciplines of Geography and Archaeology and postgraduate degrees in Physical Geography, Human Geography, Environmental Studies, Archaeology, Rock Art studies and Palaeoarchaeology. We have close links with the Evolutionary Studies Institute (ESI), as well as with the School of Geosciences, the Rock Art Research Institute and the School of Animal, Plant and Environmental Science.

**Majors**
- Geography
- Archaeology

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### CURRICULUM

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BSc in the field of Geographical and Archaeological Sciences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geography I (GEOG1000)</td>
<td>Any 4 courses</td>
<td>Any 4 courses</td>
</tr>
<tr>
<td>Any 2 or 3 other level I courses depending on other majors</td>
<td>Geography II An Introduction to Climate Change and Society II (GEOG2011), Earth and Atmospheric Processes II (GEOG2010), Environmental Governance From Local to Global II (GEOG2012), Geographical Information Systems II (GEOG2013)</td>
<td>Any 4 courses Geography III Geographic Information Systems and Remote Sensing III (GEOG3017), Theory and Practice in Sustainability Science III (GEOG3023), Climate Change and Environmental Change III (GEOG3020), Advanced Atmospheric Sciences III (GEOG3021)</td>
</tr>
<tr>
<td>Recommended majors: Chemistry I (CHEM1012), Archaeology I (ARCL1000), Ancillary Mathematics for Statistics I (MATH1010), Introduction to Life Sciences I (BIOL100)</td>
<td>Thinking Geographically: Concepts and Practices in Human Geography II (GEOG2015), Conservation Biogeography II (GEOG2014), Any other level II course depending on other majors</td>
<td>Any other level III course depending on other majors</td>
</tr>
<tr>
<td>Archaeology I (ARCL1000)</td>
<td>Any other level II course depending on other majors</td>
<td>Any other level III course depending on other majors</td>
</tr>
<tr>
<td>Recommended courses: Chemistry I (CHEM1012), Geography I (GEOG1000), Ancillary Mathematics for Statistics I (MATH1010), Introduction to Life Sciences I (BIOL100)</td>
<td>Archaelogy II (ARCL2002)</td>
<td>Any other level III course depending on other majors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Archaeology III (ARCL3002)</td>
</tr>
</tbody>
</table>
The School of Geosciences provides opportunities for students to graduate in the fields of geology, mining geology, environmental science, geophysics and palaeontology, depending on students’ course combinations. We enjoy close contacts with Mining and Minerals Exploration companies that employ most of our graduates. The School is involved in a broad range of internationally recognised research projects based on the superlative geology and fossil resources of South Africa.

**Majors:**

- Geology

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### CURRICULUM

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<thead>
<tr>
<th>1&lt;sup&gt;st&lt;/sup&gt; YEAR</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; YEAR</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BSc in the field of Geological Sciences</strong></td>
<td><strong>BSc in the field of Geological Sciences</strong></td>
<td><strong>BSc in the field of Geological Sciences</strong></td>
</tr>
<tr>
<td>Geology I (GEOL1000) AND Chemistry I (CHEM1012) AND Mathematics I (Major): Algebra I (MATH1003) with Calculus I (MATH1003) OR Ancillary Maths &amp; Stats I (MATH1010) Any 1 other level I course depending on other course sets</td>
<td>Geology II (GEOL2008) AND Mapwork for Geologists (GEOL2016) Any 1 other level I course depending on other course sets (Refer to Rules and Syllabus Book for course codes) Complementary Earth Sciences II Physics II Mathematics II Geography II</td>
<td>Geology III (GEOL3022) AND Practical Geological Mapping Techniques III (GEOL3007) Any 1 other level I course depending on other course sets (Refer to Rules and Syllabus Book for Course Codes) Advanced Earth Sciences III Mathematics III Advanced Mathematics III Physics III Mathematics Techniques III Physics III Geography III</td>
</tr>
<tr>
<td>Geology I (GEOL1000) AND Chemistry I (CHEM1012) AND Mathematics I (Major): Algebra I (MATH1003) with Calculus I (MATH1003) OR Ancillary Maths &amp; Stats I (MATH1010) Any 1 other level I course depending on other course sets</td>
<td>Geology II (GEOL2008) AND Mapwork for Geologists (GEOL2016) AND Chemistry II (CHEM2003)</td>
<td>Geology III (GEOL3022) AND Chemistry III (CHEM3028)</td>
</tr>
</tbody>
</table>
An exciting career awaits a scientist in the fields of Astronomy and Astrophysics in South Africa. The South African Government was recently instrumental in obtaining the award of the Square Kilometre Array (SKA) project, having a core of radio telescopes in the Karoo, based on our KAT7 (Karoo Array Telescopes consisting of 7 dishes) and the subsequently developed MeerKAT (comprising 64 dishes). The array will stretch throughout the African continent right up to Ghana. These very grand observational projects are supported by our own South African Large Telescope (SALT), an optical telescope sited at Sutherland. We live in very exciting times here at the bottom of Africa and are ready to receive calls from the Universe!"
The School of Chemistry at Wits has an international reputation for excellence in both teaching and research. Its staff members are prominent in the chemical community in South Africa, and many of them have international reputations as researchers in their fields of expertise. Several of them have won University and national awards for their teaching and research. The School of Chemistry at Wits is one of the leading departments of chemistry in South Africa. We offer programmes leading to a BSc with both Chemistry and Applied Chemistry (or both) as major subjects.

**Majors:**
- Chemistry
- Applied Chemistry

### CURRICULUM

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BSc in the field of Chemistry</strong>&lt;br&gt;Chemistry I (CHEM1012) AND Mathematics I (Major): Algebra I (MATH1034) Calculus I (MATH1036)&lt;br&gt;OR Ancillary Maths &amp; Stats I (MATH1010)&lt;br&gt;Any 2 or 3 other level I courses depending on other course sets</td>
<td>Chemistry II (CHEM2003) Any other level II course depending on other course set</td>
<td>Chemistry III (CHEM3028) AND Applied Chemistry III (CHEM3030)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
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</thead>
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**Fixed Curriculum:**

**Bachelor of Science in the field of Chemistry with Chemical Engineering Option**

A student who completes a Bachelor of Science in the field of Chemistry with Chemical Engineering may apply for entry to the third year of the Bachelor of Science in Engineering (Chem Eng) in the Faculty of Engineering and the Built Environment or proceed to a BSc Hons in Chemistry.

---

**Chemistry or Chemical Engineering? DO BOTH AT WITS!**

The Schools of Chemistry and Chemical and Metallurgical Engineering have a programme that leads to two degrees, a BSc in Chemistry and a BScEng (Chem Eng), in five years of study. This is a unique opportunity for chemists to acquire chemical engineering skills and chemical engineers to gain a deeper understanding of chemistry. Because chemists and chemical engineers work so closely in industry, the chemical engineer who has a deep understanding of chemistry, or the chemist who has an understanding of engineering principles, will be in a better position to compete in the job market. That is why we are offering you a means of studying both disciplines! This fixed curriculum programme leads initially to a three year degree majoring in chemistry but in which topics in chemical engineering are also covered. It is followed by a further two years of study that qualifies you for a BScEng (ChemEng degree). For more details visit: [www.wits.ac.za/chemistry](http://www.wits.ac.za/chemistry)
## CAREERS IN SCIENCE

<table>
<thead>
<tr>
<th>School</th>
<th>Course</th>
<th>Careers</th>
</tr>
</thead>
</table>
| School of Animal, Plant and Environmental Sciences    | Plant Sciences, Zoology and Ecology, Environment and Conservation | • Basic training degree for medicine, law and commerce  
• Museum work in national botanical and zoological gardens  
• Scientific journalism for newspapers, journals, broadcasting and natural history documentaries |
| School of Molecular and Cell Biology                  | Biochemistry and Cell Biology                            | • Industrial research and manufacturing of foodstuffs  
• Medical, agricultural, environmental and veterinary services and research/technical laboratory work  
• Research on drugs and insecticides |
|                                                       | Microbiology and Biotechnology                          | • Academic teaching  
• Cell biology  
• Marketing of scientific products |
|                                                       | Genetics and Developmental Biology                      | • Industrial and agricultural research in biotechnology and breeding of plants and animals  
• Medical diagnosis testing  
• Scientific and medical research |
| School of Statistics and Actuarial Science            | Mathematical Statistics                                  | • Academic teaching and research  
• Market research  
• Official statistics |
|                                                       | Actuarial Science                                        | • Investment managing  
• Retirement funds  
• Stock broking |
| School of Computational and Applied Mathematics       | Computational and Applied Mathematics                   | • Computer graphics  
• Ecological modelling  
• Mathematics of finance |
|                                                       | Mathematical Sciences                                    | • Business management and economics  
• Mineral prospecting and medical imaging  
• Town Planning and Geography |
| School of Computer Science                            | Computer Science                                         | • Management  
• Software and system architects  
• Software developments |
|                                                       | Applied Computing                                       | • Database programming  
• Network analysis and design  
• Software development |
| School of Mathematics                                 | Mathematics                                              | • Banking and finance  
• System analysts  
• Work in scientific institutions |
|                                                       | Mathematical Sciences                                    | • Business management and economics  
• Mineral prospecting and medical imaging  
• Town planning and geography |
# CAREERS IN SCIENCE

<table>
<thead>
<tr>
<th>School</th>
<th>Course</th>
<th>Careers</th>
</tr>
</thead>
</table>
| **School of Geography, Archaeology and Environmental Studies** | Archaeology             | • Archaeotourism  
• Education and archaeology  
• Heritage management       |
|                            | Geography               | • Climatological and oceanographic research  
• Geographical information systems  
• Urban planning          |
| **School of Geosciences**  | Geophysics              | • Consultant  
• Mineral and hydrocarbon exploration and research  
• Mine safety and environmental problems |
|                            | Geology                 | • Academic teaching and research  
• Conservation  
• Ecotourism  
• Education  
• Environmental education  
• Environment, engineering and water consultant  
• Environmental Impact assessment  
• Environmental management  
• Entomology  
• Investment banking and financial consultation  
• Research |
|                            | Palaeontology           | • Geological survey  
• Industrial research in fuels and biostratigraphy  
• Teaching, research at universities and museums |
| **School of Physics**      | Physics                 | • Project managers  
• Researchers  
• Software engineers |
|                            | Nuclear Sciences and Engineering | Companies such as Nuclear Energy Corporation of South Africa (Necsa), Eskom and National Nuclear Regulator (NNR) hire:  
• Engineers  
• Physicists |
|                            | Astronomy and Astrophysics | Exciting research opportunities in global multi-frequency astronomy collaborations with a firm based in Southern Africa which includes optical (SALT), radio astronomy (KAT7, MeerKAT and SKA) and gamma-ray astronomy (H.E.S.S.) |
| **School of Chemistry**    | Chemistry               | • Academic research  
• Chemical analysis  
• Environmental impact and ecology  
• Product testing |
|                            | Chemistry with Chemical Engineering option | • Chemistry  
• Forensic Science  
• Industrial applications  
• Pharmaceutical manufacturing  
• Water treatment and analysis process |