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### What does the programme entail?

#### What is chemical engineering?

A chemical engineer, **also known as a process engineer**, finds ways to convert cheap raw materials into more valuable products. Theoretical knowledge of chemistry is required, but the field mostly focuses on the application of intense mathematics to make processes as efficient as possible.

The programme provides students with the necessary foundation to ensure that once they have graduated, they will be able to make creative contributions to the world's ever-increasing needs by:

- Converting natural resources into efficient and useable forms of energy
- Developing more durable, lighter and renewable materials
- Designing more efficient, environmentally friendly processing plants
- Applying biotechnology to convert raw materials into products in a sustainable way
- Designing processes to ensure that limited natural resources, such as water, can be reused
- Leaving a clean and sustainable environment behind for future generations

A solid foundation in chemistry, physics, mathematics and biology is combined with the principles of the conservation of mass, energy and momentum, followed by the application of the economic tenets when designing equipment so as to ensure lucrative processes that will contribute to economic and industrial growth. The programme is aimed at producing graduates who can develop new and innovative processes, ensuring continued growth to satisfy the abovementioned needs.



### Who are the ideal candidates?

The ideal candidate should:

- Have a passion for mathematics
- Enjoy problem solving
- Enjoy challenges
- Be hard-working
- Be creative and an independent thinker
- Have drive and ambition
- Be a team player

This discipline is exceptionally suited to women and the number of females in our student complement is continuously growing. In the past three years 40% of the Department's graduates were female.



### Career opportunities

Chemical engineers are involved in industrial processes that convert raw materials to products with a higher economic value. This is achieved by using physical, thermal, chemical, biochemical and mechanical changes and processes.

Chemical engineers apply their specialised knowledge in the petroleum, food, mineral processing, power generation and paper and pulp industries, water and effluent treatment, and environmental engineering activities, which include air pollution control.

Like those in other engineering disciplines, chemical engineers are involved in research and development, techno-economic evaluation, equipment and plant design, process control and optimisation, construction, commissioning, operation and management, and the marketing and distribution of the final products.



LEARN  
MORE

Petroleum/  
petrochemical industry

Food and pharmaceutical  
industry

Sustainable/  
environmental  
engineering activities

### Where are chemical engineers employed?

Mineral/material  
processing

Power  
generation

Paper and pulp  
industries

Water treatment  
and valorisation



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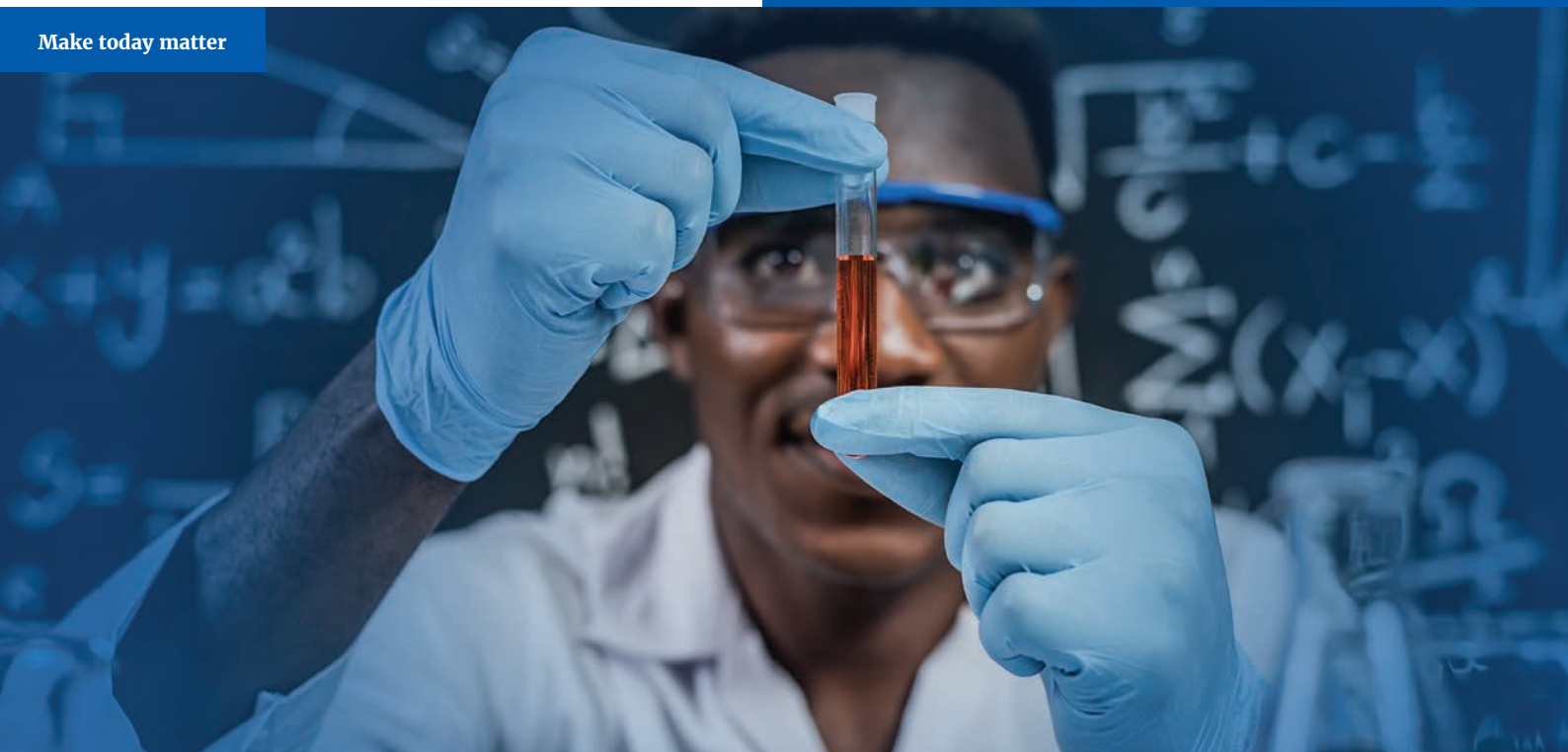
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## Bachelor of Engineering in Chemical Engineering

(continued)



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### Which companies employ our graduates?

#### Companies where Chemical Engineers are employed in South Africa include:

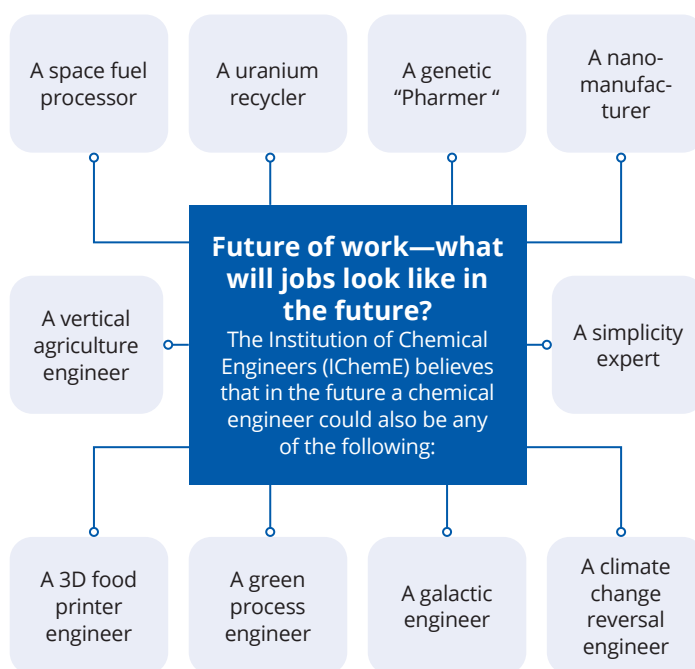
Sasol, Golder and Associates, Veolia Water, APT, Hoechst SA, Afrox, Bayer, Sucrochem, Shell Chemicals, BASF, Engen Petroleum, Silicate & Chemical Industries, ICI, Rohm and Haas, Omnia, Chemserve, Fine Chemicals Corp (SA Druggists), Noriscel, Henkel, Revertex, CH Chemicals, Chempro, Carbon Trust, McKinsey and Co. and Kimberley Clark.



### Postgraduate studies

At the postgraduate level, the Department of Chemical Engineering focuses on the following research themes:

- Sustainable environment and water utilisation processes
- Sustainable and efficient energy processes
- Advanced and applied materials
- Process modelling, control and optimisation ([www.up.ac.za/ebit-postgraduate](http://www.up.ac.za/ebit-postgraduate))



### Minimum admission requirements

Programme	Minimum requirements for NSC/IEB for 2026			
	Achievement level			APS
SCHOOL OF ENGINEERING	English Home Language or English First Additional Language	Mathematics	Physical Sciences	
<b>Bachelor of Engineering in Chemical Engineering</b> [4 years]	5	6	6	35

The suggested second-choice programmes for Bachelor of Engineering in Chemical Engineering are Bachelor of Science in Chemistry, Bachelor of Science in Mathematics and Bachelor of Science in Physics if your APS and subject requirements of your first-choice programme are not obtained.

**Contact information** Tel +27 (0)12 420 3011 | Email [chemeng@up.ac.za](mailto:chemeng@up.ac.za)

**Websites** [www.up.ac.za/chemical-engineering](http://www.up.ac.za/chemical-engineering) | [www.up.ac.za/school-of-engineering](http://www.up.ac.za/school-of-engineering) | [www.up.ac.za/ebit-postgraduate](http://www.up.ac.za/ebit-postgraduate)





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Minimum requirements for  
applicants with a school  
leaving certificate not issued  
by Umalusi (South Africa)



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Refer to the International undergraduate prospectus at [www.up.ac.za/programmes](http://www.up.ac.za/programmes) > Undergraduate > Admission Information or [click here](#) for more information.

- The closing date for applications for programmes in this faculty is 30 June.
- Meeting the minimum admission requirements does not guarantee admission into a programme.

FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY  Programmes	Minimum requirements for 2026									
	Achievement level									
	Compulsory subjects	GCSE #		HIGCSE NSSC HL	AS Level	A Level	IB		KOMBI ABITUR	KCSE
		The qualifications in the two columns below will be considered only for conditional admission. If final AS and/or A levels have been completed, these two columns will not apply. It can also not be used for final admission and/ or registration.			GCE CIE NSSC AS	GCE CIE CGCE UACE WAEC ZGCE	IB SL	IB HL		
		CIE	UK							
IGCSE LGCSE BGCSE EGCSE  O Level NSSC OL CGCE UCE NECO WAEC WASSCE ZGCE		England Wales Northern Ireland Pearson Edexcel GCSE								
Bachelor of Science in Architecture	English Mathematics Physics	C D D	4 3 3	3 3 3	C D D	E E E	4 2 2	3 2 2	60-69% 50-59% 50-59%	B C+ C+
Bachelor of Town and Regional Planning	English Mathematics	C D	4 3	3 3	C D	E E	4 2	3 2	60-69% 50-59%	B C+
Bachelor of Science in Construction Management	English Mathematics	C C	4 4	3 3	C C	E E	4 4	3 3	60-69% 60-69%	B B
Bachelor of Science in Real Estate	Physics	D	3	3	D	E	2	2	50-59%	C+
Bachelor of Science in Quantity Surveying	Chemistry (or Accounting*)	D	3	3	D	E	2	2	50-59%	C+
Bachelor of Engineering in Industrial Engineering	English Mathematics Physics Chemistry	C B B B B B B B B	4 5 5 5 5 5 5 5 5	3 2 2 2 2 2 2 2 2	C B B B B B B B B	E D D D D D D D D	4 5 5 5 5 5 5 5 5	3 4 4 4 4 4 4 4 4	60-69% 70-79% 70-79% 70-79% 70-79% 70-79% 70-79% 70-79% 70-79%	B B+ B+ B+ B+ B+ B+ B+ B+
Bachelor of Engineering in Chemical Engineering										
Bachelor of Engineering in Civil Engineering										
Bachelor of Engineering in Electrical Engineering										
Bachelor of Engineering in Electronic Engineering										
Bachelor of Engineering in Mechanical Engineering										
Bachelor of Engineering in Metallurgical Engineering										
Bachelor of Engineering in Mining Engineering										
Bachelor of Engineering in Computer Engineering										

# Only English with at least a C symbol on this level can be used for final admission.

\* Offer both PHYSICS and CHEMISTRY, or ACCOUNTING only



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FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY  Programmes	Minimum requirements for 2026									
	Achievement level									
	Compulsory subjects	GCSE #		HIGCSE NSSC HL	AS Level	A Level	IB		KOMBI ABITUR	KCSE
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		CIE	UK							
IGCSE LGCSE BGCSE EGCSE  O Level NSSC OL CGCE UCE NECO WAEC WASSCE ZGCE		England Wales Northern Ireland Pearson Edexcel GCSE								
Bachelor of Information Technology in Information Systems	English Mathematics	C C	4 4	3 3	C C	E E	4 4	3 3	60-69% 60-69%	B B
Bachelor of Information Science	English	D	3	3	D	E	3	2	50-59%	C+
Bachelor of Information Science specialising in Publishing	English	C	4	3	C	E	4	3	60-69%	B
Bachelor of Information Science specialising in Multimedia**	English Mathematics	D C	3 4	3 3	D C	E E	3 4	2 3	50-59% 60-69%	C+ B
Bachelor of Science in Computer Science	English Mathematics	C B	4 5	3 2	C B	E D	4 5	3 4	60-69% 70-79%	B B+
Bachelor of Science in Information Technology in Information and Knowledge Systems	English Mathematics	D B	3 5	3 2	D B	E D	3 5	3 4	50-59% 70-79%	C+ B+
Bachelor of Engineering This is a 5-year programme in all Engineering disciplines. <i>Previously called ENGAGE</i>	English Mathematics Physics Chemistry	C C C C	4 4 4 4	3 3 3 3	C C C C	E E E E	4 4 4 4	3 3 3 3	60-69% 65% 65% 65%	B B B B

# Only English with at least a C symbol on this level can be used for final admission.

\* Offer both PHYSICS and CHEMISTRY, or ACCOUNTING only

\*\*Possible name change to: Bachelor of Information Science specialising in Interactive Technology

