

Bachelor of Engineering Technology in Chemical Engineering

Location: Steve Biko Campus (S4 Level 1)

Description of the Programme

The learning programme consists of a coherent assembly of knowledge areas associated with chemical engineering practice, these include: mathematics, natural sciences, engineering sciences, design and synthesis, computing and IT, and relevant complementary studies. This assembly of knowledge areas provides a viable platform for further studies and lifelong learning, and will produce graduates who can function in today's fast changing, dynamic and evolving industrial marketplace.

The broad training in natural and mathematical sciences, coupled with a strong foundation in chemical engineering principles, will produce graduates that are highly numerate and have skills in problem solving, teamwork, communication and Information Technology. This qualification is designed to provide the graduate with knowledge and attributes to work in a diverse spectrum of industries including the chemical, petrochemical, pulp and paper, polymer, mining, water and waste water treatment, energy, food and pharmaceutical industries. The key attributes of the graduates of this qualification are:

- The ability to apply established and newly developed engineering technology to solve *broadly-defined* problems and develop components, systems, services and processes.
- The ability to provide leadership in the application of technology in safety, health, engineering and commercially effective operations and have well-developed interpersonal skills.
- Working independently and responsibly, applying judgement to decisions arising in the application of technology and health and safety considerations to problems and associated risks.
- A specialized understanding of engineering sciences with a deep underlying knowledge of specific technologies together with financial, commercial, legal, social and economic, health, safety and environmental matters.

This qualification provides the educational base for registration as a candidate Professional Engineering Technologist with the Engineering Council of South Africa (ECSA) and is recognized internationally through the Sidney Accord.

What is Chemical Engineering?

Chemical Engineering is a science that involves the study of processes required for the conversion of raw materials into useful products with minimum environmental impact. It uses the application of physical and life sciences, mathematics, economics and engineering sciences to produce, transform, and transport chemicals, materials and energy.

Chemical engineering professionals are involved in the transfer of scientific discoveries into modern manufacturing technologies for the production of chemical and products that benefit society. They are involved in the development and manufacture of consumer products, as well as in design, operation and control of processes in a variety of industries (e.g., petroleum, petrochemical, chemical, consumer products, food, feed and pharmaceuticals).

Examples of some typical chemical engineering operations in South Africa include:

- The conversion of crude oil into petrol, diesel, wax, etc.
- The conversion of wood into paper products.
- The extraction of sugar from sugarcane
- The conversion of coal into petrol and other useful products.
- The extraction of precious minerals

We make daily use of products that are obtained via the principles of chemical engineering, e.g.: paper, plastic materials, textiles, petrol, fertilizers, drinkable water etc.

Career Opportunities

A Chemical Engineering Technologist is employed in chemical plants for the purpose of: research and development; economic evaluation; chemical engineering design; plant operations and management; project management and product marketing.

Why do Chemical Engineering at Durban University of Technology?

The mission of the Department of Chemical Engineering is primarily to provide a relevant program, maintain a strong balance between theory and practice, establish and maintain partnerships with industry and excel in research and development with technology transfer through external engagement. Some of the key characteristics of the department are:

- The department is recognised as one of the leading University of Technology departments in Chemical Engineering teaching and research..
- In keeping with the philosophy of vocational training, the department has one of the most comprehensive laboratory facilities in the country.
- It has received full accreditation for all its chemical engineering programmes from the Engineering Council of South Africa.
- The department has qualified chemical engineers with a range of expertise that are responsible for teaching and research. This ensures the maintenance of high standards, a continuous cross flow of ideas, and provides the ideal basis for the transfer of the latest technology to students.
- The Department is actively involved in relevant research. The research areas include: water and wastewater treatment; membrane technology; particle technology; beneficiation of waste streams, catalysis, fuels, thermodynamics and mathematical modelling.

The courses offered are current and relevant because the Department of Chemical Engineering has extensive interaction with the chemical industry, research organisations, The South African Institution of Chemical Engineers and the Engineering Council of South Africa.

Entry Requirements

| DEPARTMENTAL NSC REQUIREMENTS | | DEPARTMENTAL SENIOR CERTIFICATE REQUIREMENTS | | |
|---|-----------------|--|---|-----------------------------------|
| Compulsory Subjects A minimum of 28 points will be considered | NSC Rating Code | A Senior Certificate with a pass in English or equivalent qualification. | | |
| English (home) OR English | | 4 | 4 | Compulsory Subjects H G SG |
| Mathematics | 4 | Mathematics | C | B |
| Physical Science | 4 | | | |
| NB: Mathematical Literacy will not be considered. | | Physical Science | C | B |
| A pass in the subjects Technical Drawing and/or Computer Studies will be an added recommendation. | | | | |

National Certificate (Vocational) Level 4

A minimum mark of 60% for English and Life Orientation. Mathematics and Physical Science at 70-79% and two other additional vocational subjects related to the field of chemical engineering at a minimum of 70-79%.

NB: These minimum admission requirements are subject to more restrictive departmental admission requirements where applicable

Selection Criteria

The following criteria are used in the final selection process: A minimum of 28 points is required for entry to the degree. Subjects Required: Mathematics, Physical Science, English, plus three other subjects excluding Life Orientation. The points for Mathematics and Physical Science will be doubled.

Applicants will be ranked according to the sum of their scores for Mathematics and Physical Science, subject to a minimum combined score of 120%.

The exit certificate of the candidate must qualify the candidate for degree study at an institution of higher learning.

Students are ranked on merit in the final selection.

The Department reserves the right to consider only 1st to 3rd choice students for Chemical Engineering.

Admission Requirement based upon Work Experience, Age and Maturity

For admission to entry level DEGREE studies:

A person may, subject to such requirements as the Senate may determine, be admitted if such a person is in possession of a National Senior Certificate, Senior Certificate or an equivalent certificate, but lacks the minimum requirements for admission to the degree provided that:

- The person shall have reached the age of 23 in the first year of registration and shall have at least: three years' appropriate work experience; and/or capacity for the proposed instructional programme, which shall be assessed by a Senate-approved admission assessment comprising of a DUT Standardised Assessment Test for Access and Placement (SATAP), Academic Literacies (AL) & English for Academic Purposes (EAP) (2,5 hours) and/or an appropriate subject or programme specific written assessment designed and marked by the relevant Department; and the person has obtained
- A conditional certificate of exemption from the Matriculation Board (when in possession of the Senior Certificate (SC)); OR has met
- The requirements for Senate discretionary admission (when in possession of the NSC or equivalent), where Senate is satisfied the applicant has shown sufficient academic ability to ensure success, and that the person's standard of communication skills, and/or work experience are such that the person, in the opinion of the Senate, should be able to complete the proposed instructional programme successfully.
- The person's application for admission in terms of with work experience, age and maturity is approved prior to registration.

Applicants intending to gain admission through work experience, age and maturity must submit their applications at least four months before commencement of the academic year.

NB: For semester programmes there would be a single registration for semester 1 and semester 2 at the beginning of each academic year.

Semester One

| | |
|--------------------------------------|---------|
| Engineering Mathematics 1A | EMTA101 |
| Engineering Chemistry 1A | ENCA101 |
| Cornerstone101 | CSTN101 |
| Engineering Physics 1A | EPHA101 |
| Chemical Engineering Fundamentals 1A | CEFA101 |
| Technical Literacy | TCHL101 |

Semester Two

| | |
|--------------------------------------|---------|
| Engineering Mathematics 1B | EMTB101 |
| Engineering Chemistry 1B | ENCB101 |
| Computer Applications 1A | CMAPI01 |
| Engineering Physics 1B | EPHB101 |
| Chemical Engineering Fundamentals 1B | CEFB101 |
| Chemical Engineering Design 1 | CEDS101 |

Second year Curriculum

Semester One

| | |
|----------------------------|---------|
| Engineering Mathematics 2A | EMTH201 |
| Engineering Chemistry 2A | ENCM201 |

Computer Applications 2A
Process Fluid Flow
Chemical Engineering Laboratory 1A
Chemical Engineering Design 2A
Principles of Management

Semester Two

Transfer Processes
Applied Statistics
Process Safety and Occupational Health
Applied Thermodynamics
Chemical Engineering Laboratory 1B
Chemical Engineering Design 2B

Third year Curriculum

Semester One

Environmental Engineering
Chemical Thermodynamics
Unit Operations
Multistage Operations
Chemical Engineering Laboratory 2A
Chemical Engineering Design 3A

Semester Two

Particle Technology
Reaction Engineering
Process Control
Project Management
Chemical Engineering Laboratory 2B
Chemical Engineering Design 3B

Closing Date for Applications: 30 September 2019

CAO Code: DU-D-ECH Application Forms

Contact the Central Applications Office (CAO)

Address letters to:

Central Applications Office
Private Bag X06
Dalbridge 4014
Tel: (031) 2684444
Fax: (031) 2684422

For Further Information,

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CMA201
PFFL101
CELA101
CEDA201
PCPM101

TRFP101
APPS101
PSOH101
APTH101
CELBI01
CEDB201

ENVN101
CTHM101
UNOP101
MSOP101
CELA201
CEDA301

PTCT101
RCNE101
PCSC101
PMNM101
CEL201
CEDB301



CAREER INFORMATION

BACHELOR OF ENGINEERING TECHNOLOGY IN

CHEMICAL ENGINEERING

1 JANUARY -31 DECEMBER 2020

FACULTY OF
ENGINEERING
& THE BUILT
ENVIRONMENT

DEPARTMENT OF
ENGINEERING:
CHEMICAL

2020

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