

National Diploma: Engineering: Chemical

Remarks

a. Admission requirement: A National Senior Certificate with an endorsement of a bachelor's degree or a diploma or an equivalent qualification, with an achievement of (4) for English and a (5) each for Mathematics and Physical Sciences. Applicants with a final combined score of 10 and more for Mathematics and Physical Science and an APS of 28 will be ranked according to APS achieved and considered for the National Diploma ***direct access***.

English	Mathematics	Physical Sciences	Three other subjects, excluding Life Orientation	APS Total
4 (50 –59%)	5 (60 –69%)	5 (60 –69%)	14	28

A National Senior Certificate with an endorsement of a bachelor's degree or a diploma or an equivalent qualification, with at least (4) for English, (4) for Mathematics and (3) for Physical Sciences. Total APS of 23 will be considered for the National Diploma **conditional access**. Candidates with a final score of less than 10 for Mathematics and Physical Science and an APS of 23 will write an Academic Placement Test before final acceptance. All applicants will then be ranked according to APSs achieved.

English	Mathematics	Physical Sciences	Three other subjects, excluding Life Orientation	APS Total
4 (50 –59%)	4 (50 – 59%)	3 (40 – 49%)	12	23 - 27

NCV - A National Senior Certificate (Vocational) with an endorsement of a bachelor's degree or a diploma or an equivalent qualification, with at least (4) for English and (4) for Mathematics and (5) for Physical Sciences/Applied Engineering Technology.

English	Mathematics	Physical Sciences/Applied Technology/ Materials	Three other subjects, excluding Life Orientation	APS Total
4 (50 –59%)	4 (50 – 59%)	5 (60 – 69%)	12	23

Alternative and international qualifications will be assessed on the equivalent issued by the South African Qualifications Authority. Applicants may also apply for recognition of prior learning at the Recognition of Prior Learning (RPL) Office, Room LG-46, Building 21 (tel. 012 382 4672). The relevant documentation will be requested from these applicants, and these cases will be handled on an ad hoc basis.

APS calculation
The calculation of an admission point score (APS) is based on a candidate's achievement in any **six** recognised 20-credit subjects by using the National Senior Certificate seven-point rating scale of achievement. Life Orientation is **excluded** when calculating the APS.

The Faculty requires Mathematics for most programmes, as Mathematical Literacy does not provide sufficient prior knowledge for higher education studies in engineering.

Communication of results
Candidates who meet the minimum requirements will be informed accordingly in an official letter from the Office of the Registrar.

b. Duration: National Diploma
The diploma programme consists of four semesters of theoretical lectures at the University, alternated with two semesters of experiential learning.

c. Intake for the course: January only.

FIRST YEAR

FIRST SEMESTER (S1)

CODE	SUBJECTS	PREREQUISITE SUBJECTS
CET20XT	Chemical Engineering Technology: Chemical Principles II	None
CHE141B	Chemistry IA	None
COS101T	Communication Skills I	None
CSK101B	Computer Skills I	None
DCE111T	Drawing: Chemical Engineering I	None
MAT171T	Mathematics I	None
PHU161B	Physics IA	None

SECOND SEMESTER (S2)

CODE	SUBJECTS	PREREQUISITE SUBJECTS
CET20YT	Chemical Engineering Technology: Metallurgical Principles II	Chemistry I A, Chemical Engineering Technology: Chemical Principles II Mathematics I and Physics IA
EPH201T	Engineering Physics II	Physics IA
ICH231T	Inorganic Chemistry II	Chemistry IA
MAT271T	Mathematics II	Mathematics I
OCH221T	Organic Chemistry II	Chemistry IA
PCB221T	Physical Chemistry II	Chemistry IA

SECOND YEAR

FIRST SEMESTER (S3)

CODE	SUBJECTS	PREREQUISITE SUBJECTS
CET33AT	Chemical Engineering Technology IIIA	Chemical Engineering Technology II
CMP33AT	Chemical Plant IIIA	Chemistry IA, Mathematics I
CPI201T	Chemical Process Industries II	Inorganic Chemistry II Organic Chemistry II
MSK121T	Management Skills I	None
TCE301T	Thermodynamics: Chemical Engineering III	Physical Chemistry II

SECOND SEMESTER (S4)

CODE	SUBJECTS	PREREQUISITE SUBJECTS
CET33BT	Chemical Engineering Technology IIIB	Chemical Engineering Technology IIIA
CMP33BT	Chemical Plant IIIB	Chemical Plant IIIA
CPP301T	Chemical Process Design:	Chemical Process Industries II, Drawing:Chemical Engineering II and Mathematics II
PCT301T	Process Control III	Mathematics II
TDA301T	Thermodynamics: Applied III	Thermodynamics: Chemical Engineering III

THIRD YEAR

FIRST SEMESTER (S5)

CODE	SUBJECTS	PREREQUISITE SUBJECT
EXP1ECH	Experiential Learning I	Complete all S4 subjects

SECOND SEMESTER (S6)

CODE	SUBJECT	PREREQUISITE SUBJECT
EXP2ECH	Experiential Learning II	Experiential Learning I

The Department encourages students to register with Engineering Council of South Africa (ECSA) as professional technicians.

FOURTH YEAR

Baccalaureus Technologiae: Chemical
Course Code: BTCE02

Remarks

a. Admission requirements: A National Diploma: Engineering: Chemical in Technology: Engineering: Chemical or an equivalent qualification.

b. Duration: A minimum of one year and a maximum of three years; full-time only.

c. Intake for the course: January and July.

FIRST SEMESTER
(After completion of Experiential Learning II)
ATTENDANCE

CODE	SUBJECTS
PJC400T	Project: Chemical Engineering IV

CODE	SUBJECTS	PREREQUISITE SUBJECTS
CET40YT	Chemical Engineering Technology: Heat and Mass Transfer IV	None
CET40ZT	Chemical Engineering Technology: Unit Operations IV	None
CPD40XT	Chemical Process Design: Equipment Design IV	None
MTE301T	Mathematics: Chemical Engineering III	None
REA401T	Reactor Technology IV	None

SECOND SEMESTER
(After completion of Experiential Learning II)

CODE	SUBJECTS	PREREQUISITE SUBJECTS	
CET40XT	Chemical Engineering Technology: Fluid Flow IV	None	
CPD40YT	Chemical Process Design: Plant Design IV		CPD40XT
PCI401T	Production Engineering: Chemical Industry IV	None	
PCT401B	Process Control IV	None	

MASTER'S DEGREE IN TECHNOLOGY: ENGINEERING: CHEMICAL
Course code: MTCE95

Remarks

a. Admission requirements: A Bachelor's Degree in Technology: Engineering: Chemical or an equivalent qualification.

b. Duration: A minimum of one year and a maximum of three years.

CODE	SUBJECT
ECH500T	Dissertation: Engineering: Chemical V
ECH500R	Dissertation: Engineering: Chemical V (re-registration)

DOCTORATE IN TECHNOLOGY: ENGINEERING: CHEMICAL
Course code: DTCE96

Remarks

a. Admission requirements: A Master's Degree in Technology: Engineering: Chemical or an equivalent qualification.



b. Duration: A minimum of two years and a maximum of five years.

CODE	SUBJECT
ECH700T	Thesis: Engineering: Chemical
ECH700R	Thesis: Engineering: Chemical (re-registration)

JOB OPPORTUNITIES
Chemical engineers are employed in a wide variety fields. Most chemical engineers are employed in the processing industries. Most large companies have their own research departments to research new processes and new applications. Chemical engineers can also choose to focus their attention on one of the many applications of chemical engineering, such as process control, reactor technology, process simulation, etc.

JOB DESCRIPTION
Chemical engineers may take up a position at a chemical processing plant, where at first they will be involved in overseeing the day-to-day operation of the process. They will be concerned with the overall operation, control and optimisation of the plant.

CAREER PROFILE
Chemical engineers should have a strong aptitude for mathematics and science, and have an interest in the application of scientific principles to solve problems. Interpersonal and communication skills are also very important.

POSSIBLE EMPLOYERS
Processing industries including but not limited to: Chemical and petrochemical, pharmaceuticals, explosives, fertilizers, food and beverages, and metallurgical plants (refining of platinum, gold, etc.). Chemical engineers can also choose to follow a career in research.

POSSIBLE FURTHER STUDIES
Master's Degree and Doctorate in Technology. Registration can take place at any time of the year but not after September.

COST OF FIRST YEAR OF STUDY
Approximately R27 230 (including tuition fees and books).

ENQUIRIES
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Tshwane University of Technology
We empower people

Faculty of Engineering and the Built Environment
Department of Chemical, Metallurgical and Materials Engineering
Pretoria Campus
National Diploma Chemical Engineering
B Tech: Chemical Engineering

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