

Materials Science and Metallurgical Engineering



South Africa has the world's largest mineral deposits of gold, chromium, platinum, vanadium and manganese. We also have large reserves of iron, lead, zinc, copper, nickel, coal and diamonds. The minerals industry contributes to some 50% of South Africa's exports and is one of the largest employers in the country.

The Department of Materials Science and Metallurgical Engineering, established in 1958, offers the BEng (Metallurgical Engineering) degree programme, fully accredited by ECSA (2017-2021). Professional metallurgical engineers who graduate from this programme, take minerals from the phase of exploration into successful utilisation of high-performance products.

The three main fields of specialisation in metallurgical engineering are:



Minerals processing

Processing the ore to release and concentrate the valuable minerals contained in it.



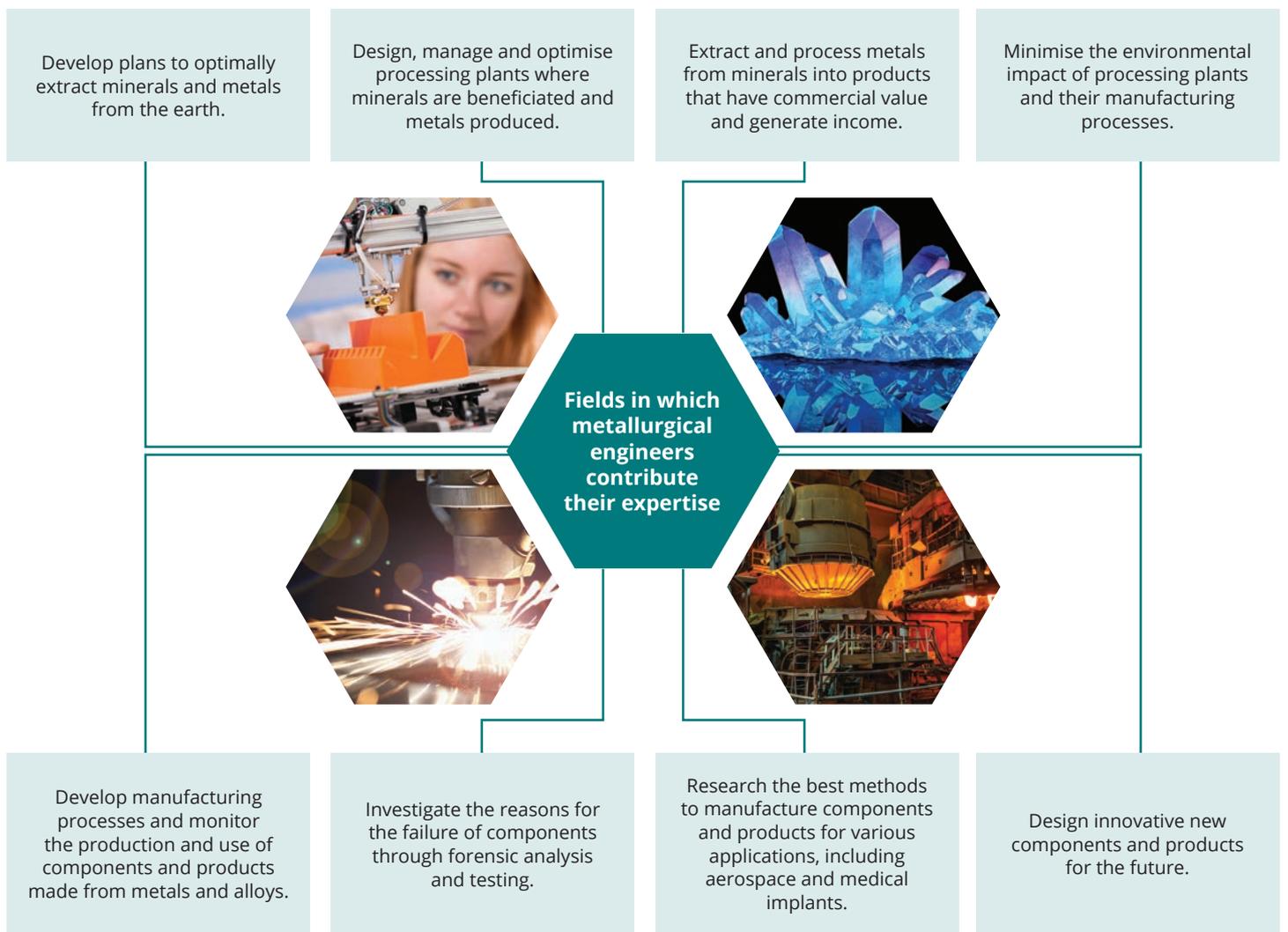
Extractive metallurgy

The processing of mineral concentrates to metals through pyrometallurgy (including smelting) or hydrometallurgy (including leaching) as refining steps.



Materials production, performance and integrity

This field entails the development of new alloys, the production of useful materials and products from raw metals, including forming through casting, 3D printing using lasers and joining through welding. The forensic investigation of failures is also of great importance.



Careers:

Metallurgical engineers unlock the riches of deposits of metal ores and minerals and optimise the manufacture and performance of metallic components. You'll find metallurgical engineers where valuable minerals are recovered from ore, where metals are produced from the minerals and where the metals are converted into useful materials as well as into high-performance products. Areas of specialisation include minerals processing, extractive metallurgy, materials engineering and performance, advanced manufacturing processes, including laser-assisted additive manufacturing and welding, as well as failure analysis and forensic engineering.

Careers include production engineers, plant managers, consultants, forensic engineers and researchers.

Minimum admission requirements

Programmes	Minimum requirements for NSC and IEB for 2023			APS
	Achievement level			
SCHOOL OF ENGINEERING	English Home Language or English First Additional Language	Mathematics	Physical Sciences	
BEng (Metallurgical Engineering) [4 years] Close on availability of space: As soon as the number of places available for this programme are filled, it will be closed for further applications.	5	6	6	35

The suggested second-choice programmes for BEng (Metallurgical Engineering) are BSc (Chemistry), BSc (Mathematics) and BSc (Physics).

Note: The Engineering Council of South Africa (ECSA) accredits our programmes and our degrees meet the requirements for Professional Engineers in SA.

Contact information appears on page 2.



For more information on other programmes in the Faculty of Engineering, Built Environment and Information Technology, go to www.up.ac.za/programmes > Undergraduate > Faculty brochures.



Enquiries may be forwarded to:
Email: gabi.ngema@up.ac.za
Tel: +27 (0)12 420 3182/4551



For career advice, please consult a Student Advisor. To make an appointment, send an email to carol.bosch@up.ac.za

Published on: 24 February 2022

Source: www.up.ac.za/programmes > Undergraduate > Faculty brochures



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

UNIVERSITY OF PRETORIA Disclaimer: Information submitted in this publication contains information about regulations, policies, tuition fees, curricula and programmes of the University of Pretoria applicable at the time of publication. Amendments to or updating of the information on this application may be affected from time to time without prior notification. The accuracy, correctness or validity of the information contained on this application is therefore not guaranteed by the University at any given time and is always subject to verification. The user is kindly requested, at all times, to verify the correctness of the published information with the University. Failure to do so will not give rise to any claim or action of any nature against the University by any party whatsoever.
ISBN 978-1-86854-802-6