

Career Profile: Mining Engineer

Mining engineers plan, design, construct, manage and operate mines and the facilities that are used to extract raw materials from the earth. They are responsible for the economic and safe operation of mines. Mining engineers are expected to have expertise in engineering, specialist mining knowledge, management skills, people skills, and a sound grasp of financial and business principles.

The components of mining operations include drilling, blasting, loading of the ore, transportation of ore, waste and supplies, ventilation and refrigeration, ground support and pumping water. A mining engineer doesn't operate in isolation but is supported by a team of other experts when deciding how to optimally mine an ore deposit, design an entire operation and integrate and coordinate the mining effort so that it runs with clockwork precision.

Different minerals demand specific mining approaches and there are also various types of mining. The two principal types are underground and open cast mining, each of which has its own disciplines and challenges. South Africa has specialist expertise in deep level mining which introduces additional challenges for the mining engineer.

Education Requirements

National Senior Certificate (NSC)

For a career in mining engineering students are advised to select Science and Mathematics and to add to this a selection from the designated subjects. These are subjects that are particularly suitable for tertiary study.

Bachelor Degree

Bachelor of Engineering (Mining engineering) BEng (Mining) (4 years) - University of Pretoria

Bachelor of Science (Engineering) in Mining Engineering - BSc (Eng) in Mining Engineering (4 years) University of the Witwatersrand

Offered at:

- [University of Pretoria](http://web.up.ac.za/default.asp?ipkCategoryID=2327)¹ (Department of Mining Engineering)
- [University of the Witwatersrand](http://web.wits.ac.za/Academic/EBE/MiningEng/Undergraduate.htm)² (School of Mining Engineering)

¹ <http://web.up.ac.za/default.asp?ipkCategoryID=2327>

² <http://web.wits.ac.za/Academic/EBE/MiningEng/Undergraduate.htm>

Students who prefer a more practical approach can enrol for programmes to qualify in mining engineering at BTechnology and Diploma levels. Specializations are offered in these programmes.

National Diploma / BTech

The **National Diploma** is a three year course which includes guided practical experience. The diploma is a pre-requisite for admission to a **Bachelor of Technology - BTech**.

Offered at:

- [University of Johannesburg](#)³ (Department of Mining Engineering)
- [UNISA](#)⁴ (College of Science, Engineering and Technology)

Specializations offered:

There are some National Diplomas and BTech degrees to consider.

University of Johannesburg

National Diploma: Mining engineering

BTech: Mining engineering

UNISA

National Diploma: Mining engineering Surface mining

BTech: Mining engineering

Admission requirements

As admission requirements vary from one institution to another, find out what the specific requirements are by checking on the website and contacting the university if you have any queries.

Possible Employers

Here are some of the possible employers:

- [Anglo American Corporation Limited](#)⁵
- [AngloGold Ashanti](#)⁶
- [Anglo Platinum](#)

³ <http://www.uj.ac.za/mining/StudyInformation/NationalDiploma/tabid/1771/Default.aspx>

⁴ http://brochure.unisa.ac.za/brochure/showprev.aspx?d=l_4_23&f=p_NDMIN

⁵ <http://www.angloamerican.co.uk/>

⁶ <http://www.anglogold.com/default.htm>

- [BHP Billiton](#)⁷
- [De Beers Consolidated Mines](#)⁸
- [Durban Roodepoort Deep](#)⁹
- [Gold Fields Limited](#)¹⁰
- [Harmony Gold](#)¹¹
- [Impala Platinum Limited](#)¹²
- [Ingwe Coal Corporation Ltd](#)¹³

Find out more

Find out more about engineering in mining and possible careers and courses for mining engineers:

- [Overview](#)¹⁴ of the role of the mining engineer in gold mining.
- [More in-depth](#)¹⁵ view of the job of a mining engineer.
- [Interesting visuals and diagrams](#)¹⁶ of opencast mining.
- [Chamber of Mines](#)¹⁷ website contains useful information about many aspects of mining.
- Article in the Journal of the South African Institute of [Mining and Metallurgy](#)¹⁸ of the training and development role the Institute needs to play in the future.
- Discipline-specific guidelines for [mining engineers](#).¹⁹

⁷ <http://www.bhpbilliton.co.za/bb/home.jsp>

⁸ <http://www.debeersgroup.com/Inside-De-Beers/Family-of-Companies/De-Beers-Consolidated-Mines/>

⁹ <http://www.drd.co.za/>

¹⁰ <http://www.goldfields.co.za/>

¹¹ <http://www.harmony.co.za/>

¹² <http://www.implats.co.za/business/impala.asp>

¹³ <http://www.mbendi.com/orgs/cb23.htm>

¹⁴ <http://www.anglogold.com/Careers/Career+Choices/Mining+Engineering.htm>

¹⁵ <http://www.mining.unsw.edu.au/Whatis/whatdomindo.htm>

¹⁶ <http://www.mine-engineer.com/mining/mine8.htm>

¹⁷ <http://www.bullion.org.za/Departments/SkillsDevl/Skills.htm>

¹⁸ <http://www.saimm.co.za/publications/downloads/v102n02p121.pdf>

¹⁹ http://www.ecsa.co.za/documents/DSG_Mining.pdf

Are you suited to this career?

This quick quiz can help you to identify whether you are suited for this occupation.

Quiz	Yes	No
Are you interested in mining?		
Are you able to work under pressure?		
Are you able to consider a range of options when analyzing problems?		
Do you find it easy to take the lead and do others have confidence in your ability to lead?		
Are you tenacious, seeing a challenge and task through to the end?		
Are you a keen observer of people and their behaviour?		
Do you have a common sense, practical approach?		
Are you comfortable making decisions?		
Are you able to work well with others?		
Can you express yourself well orally and writing?		

If you have mainly yes answers it may be an indication that this is an occupation to consider.