

Career Profile: Civil Engineer

A civil engineer is responsible for the planning, design, maintenance and management of construction projects such as multi-storey buildings, roads, bridges, harbours, airports, sport stadiums and water and sewage purification plants. In doing their work civil engineers get involved in reshaping, improving and conserving the environment and creating facilities and the infra-structure necessary for communities to live and function effectively.

Civil engineering is a very broad field and engineers usually specialise in one of the following areas:

- Geotechnical work involving, e.g. rock anchors and piling, building tunnels and laying foundations
- Transportation, e.g. public transport, airports, traffic control, road construction
- Marine environment, e.g. impact studies
- Municipal services, e.g. pipelines, water treatment
- Construction work, e.g. large buildings
- Structural design, e.g. ensuring the safe structure of large buildings or bridges
- Project management, e.g. carrying out projects in the above fields.

Civil engineers usually work in multi-disciplinary teams. They are often called on to provide direction and guidance for a team of people involved in construction projects, such as surveyors, draughtsmen, and construction site managers. Alternatively a civil engineer may serve as a consultant for engineering, construction or architectural firms, carry out research, or teach at a university.

Education Requirements

National Senior Certificate (NSC)

For a career in mechanical engineering students are advised to select English, Mathematics, and Physical Science 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 Science in Engineering – BSc Eng (Civil) (4 years)

A four year degree programme that focuses on developing knowledge and skills for entry into careers in the field civil engineering

Offered at:

- [University of Johannesburg¹](#)
- [University of Pretoria²](#)
- [University of the Witwatersrand³](#)

Specializations Offered:

University of the Witwatersrand

Civil Engineering

Environmental Engineering

National Diploma / BTech

Students who prefer a more practical approach can enrol for programmes to qualify as civil engineering technologist and technician at BTech and Diploma levels. Specializations are offered in these programmes.

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.

Registration as a professional engineer

A person who has obtained a recognised BSc(Eng) or BEng degree is eligible for registration as a Candidate Engineer. After gaining at least 3 years of appropriate practical experience a civil engineer may apply for registration as a Professional Engineer under the auspices of the Engineering Council of South Africa.

Possible Employers

- Government
- [Transnet⁴](#)
- [Eskom⁵](#)
- [Iskor⁶](#)
- [CSIR⁷](#)
- Municipalities
- Universities
- Manufacturers
- Engineering consultants

¹ <http://www.uj.ac.za/Default.aspx?alias=www.uj.ac.za/civilsci>

² <http://web.up.ac.za/default.asp?ipkCategoryID=2407>

³ <http://web.wits.ac.za/Academic/EBE/CEE/>

⁴ <http://www.transnet.co.za/>

⁵ <http://www.eskom.co.za/>

⁶ <http://www.iscor.co.za/>

⁷ <http://www.csir.co.za/>

- The registered engineer with the necessary experience and initiative can work as consultant for any of the above-mentioned companies and organisations. S/he can also start her/his own consultancy.

Find out more

Find out more about civil engineering, bursaries and jobs:

- The [Institution of Civil Engineering](http://www.civils.org.za/)⁸ has a number of useful services and publications. For example, Continuous Professional Development (CPD) gives information on development courses and activities. It is also possible to view back issues of the [Civil Engineering Magazine](http://www.civils.org.za/Publications/CivilEngineeringMagazine/MonthlyIssues/tabid/84/Default.aspx)⁹, which reports on many interesting projects, from the following link.
- The [South African Association of Consulting Engineers](http://www.saace.co.za/)¹⁰ will enable you to get some idea of how engineering consultants are organised.
- The [South African job board and recruitment portal](http://www.engineeringcareers.co.za/)¹¹ for the South African engineering industry.
- [BMD](http://www.bmdnet.co.za/C/index.htm)¹² contains fairly detailed information on a whole range of careers, including those in civil engineering.

⁸ <http://www.civils.org.za/>

⁹ <http://www.civils.org.za/Publications/CivilEngineeringMagazine/MonthlyIssues/tabid/84/Default.aspx>

¹⁰ <http://www.saace.co.za/>

¹¹ <http://www.engineeringcareers.co.za/>

¹² <http://www.bmdnet.co.za/C/index.htm>

Are you suited to this career?

This quick quiz can help you to identify whether you are suited for this occupation. The questions are based on interests, characteristics and values typical of people who work as engineers.

Quiz	Yes	No
Do you have an inquiring, analytical mind?		
Are you good at analysing problems and finding solutions?		
Do you find it easy to take the lead in a group?		
Can you think creatively and come up with original ideas?		
Are you able to make decisions under pressure?		
Can you communicate clearly orally and in writing?		
Do you work well with other people?		
Do you work in a structured and organized way?		
Do you have above average mathematical and scientific aptitude?		
Do you want to participate in projects that will benefit the long term development of the country?		

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