Career Profile: Agricultural Engineer

Agricultural engineers can operate in the fields of agriculture, horticulture or forestry. They understand agricultural practices and solve agricultural problems by applying engineering principles of science and technology. The scope of agricultural engineering is broader and more diversified than most other engineering disciplines, and the agricultural engineer must be ready to deal with power and machinery, electrification, structures, soil and water conservation and processing of agricultural products. Because the scope of the job is so wide, agricultural engineers often need to interact with specialists from other disciplines. They also require a practical approach and adaptability. Plans frequently have to be modified as the unexpected often occurs.

As an agricultural engineer you will probably be expected to work both indoors and out of doors. Typical activities could include:

- developing criteria for the design, manufacture or construction of equipment, structures or facilities
- designing or building equipment for ploughing and fertilizing, harvesting and moving products
- supervising the building of structures for storing crops, or providing shelter for animals including aspects such as light, heat, air-conditioning, water supply and disposal of waste
- assisting in soil and water conservation by planning and directing construction of irrigation (including dams), drainage and flood control systems; applying contour and other cultivation systems to protect against erosion .
- advising on various ways of preparing and treating agricultural products for markets and problems related to handling, storing, packaging or transportation of these.

Work opportunities usually occur in agricultural manufacturing, field engineering, service engineering, environmental control or environmental engineering.

Education Requirements

National Senior Certificate (NSC)

For a career in agricultural 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

A four year degree programme **Bachelor of Science in Agricultural Engineering** (4 years), which also has a five year option, focuses on developing knowledge and skills for entry into careers in the field of agricultural engineering. The University of KwaZulu-Natal[1] is the only university in the country that now offers this degree. The degree is being phased out at University of Pretoria.

Other universities offer programmes which have some relevance to agricultural engineering, these include:

- University of Pretoria[2] offers a BSc(Agric) Agricultural Economics/Agribusiness Management which includes a short course on agricultural engineering in first year. You will need to explore whether it would be a suitable alternative route for you. The emphasis is on farm management and business, rather than on engineering.
- The University of Limpopo[3] School of Agricultural and Environmental Sciences has five academic departments (Agricultural Economics, Animal Production, Geography and Environmental Studies, Plant Production and Soil Science). The School offers a four year BSc (Agric) programme.
- The University of Venda's[4] School of Agriculture, Rural Development and Natural Resources offer a BAgric (3 years) and a BSc in Agriculture (4 years). In the future they are planning to offer a degree in Agriculture and Rural Engineering.

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 an Agricultural Engineer may apply for registration as a Professional Engineer under the auspices of the Engineering Council of South Africa.

Possible Employers

- Agricultural cooperatives
- Department of Agriculture
- Farmer
- Farm manager
- Fertiliser and irrigation companies
- Food processing companies – SASOL[5], AECI[6]
- Industry service organisations – Sugar industry

[1] http://www.sciag.ukzn.ac.za/
[2] http://web.up.ac.za/default.asp?ipkCategoryID=4599
[3] http://www.ul.ac.za/index.php?Entity=School%20Main%20Menu&school_id=6%20
[4] http://www.univen.ac.za/agriculture/agri_programmes.html
[5] http://www.sasol.com/sasol_internet/frontend/navigation.jsp?rootid=7&navid=7
[6] http://www.aeci.co.za/

- Institute for Agricultural Engineering (part of the Agricultural Research Council)
- Manufacturers of agricultural equipment
- Research – Agricultural Research Council[7] (ARC)

Find out more

Find out more about agricultural engineering, bursaries and jobs:

- This British careers[8] website gives an exciting picture of the wide range of opportunities available to an agricultural engineer.
- The Agricultural Research Council[9] (ARC) website contains interesting information on many aspects of agriculture and also provides links to the various institutes.

[7] http://www.arc.agric.za/
[8] http://www.career-descriptions.co.uk/agricultural-engineer-career-description.htm
[9] http://www.arc.agric.za/

Are you suited to this career?

This quick quiz can help you to identify whether you are suited for this career which combines a keen interest in agriculture with the disciplines of engineering.

QUIZ	YES	NO
Are you interested in agriculture?		
Are you good at Mathematics and Science?		
Do you work methodically?		
Do you like finding out how things work?		
Are you computer literate?		
Do you enjoy meeting deadlines?		
Are you creative and do you try different approaches when faced with a problem?		
Do you try to keep up with developments in the latest technology and machinery?		
Do you work well with other people and communicate clearly with them?		
Do you have good health and physical stamina?		

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