



Programme in Blasting Engineering

Presented by the Department of Mining Engineering, University of Pretoria

5 ECSA CPD Points

The **Programme in Blasting Engineering** covers the basics of all drilling and blasting activities on surface and underground mining operations. The application of drill and blast design and execution in the mining environment is taken to an advanced level based on real industry scenarios. Case studies are analysed and discussed, downstream effects and processes of blasting outcomes are evaluated for continuous improvements of the drilling and blasting cycle.

Outline of the programme

This unique course is interactive, collaborative and uses multiple methods of learning to develop delegates knowledge and skills. The theory of the subject and application thereof, covers topics from rock mass behavior, during drilling and blasting, understanding fragmentation and the impact on the mining cycle, specialised blasting practices and the effect of blasting on the environment in more detail. The assessment of blasting practices, downstream benefits, safety and legislation is covered in great detail for sustainable drilling and blasting in the Fourth Industrial Revolution (4IR).

This course provides a comprehensive training experience and is based on the undergraduate and post graduate Rock Breaking courses presented in the Department of Mining Engineering degree programmes at the University of Pretoria. Contact sessions are recommended as they encourage high levels of engagement, participation, and dialogue to share practical experience with experts in the field.

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Programme content

17 Feb 2023	Geology and Rock Drilling
17 Mar 2023	Introduction to Commercial Explosives
21 Apr 2023	Underground Explosives Application
19 May 2023	Surface Mining Drill and Blast Application
23 Jun 2023	Fragmentation
14 Jul 2023	Environmental Blasting
18 Aug 2023	Blast Performance Assessment
15 Sep 2023	Explosives Legislation and 3-D VR Centre
20 Oct 2023	Economics of Blasting/Certificate Ceremony

Learning outcomes

The detailed outcomes would be reached as presented in the industry syllabus, however on a broader base, the course will be aimed at developing the delegates ability in the six cognitive levels: knowledge, comprehension, application, analysis, synthesis and evaluation. Thus, when being examined on the topics detailed in this programme, delegates would be able to demonstrate their capacity for:

- Comprehending and understanding the general blasting engineering principles covered in this syllabus and applying these to solve real world blasting problems in the mining and civil environments.
- Applying fundamental scientific knowledge, comprehension and understanding to predict the behavior of blasting outcomes in different types of risks in real world mining environments.
- Performing creative procedural design and synthesis of drill and blast layouts and support systems to control and influence different blast design processes.
- Understanding the greater picture in the total blasting outcomes and the overall evaluation thereof
- Communicating, explaining and discussing the reasoning, methodology, results and ramifications of all the above aspects in a professional manner at all levels.

Who should enrol?

This course is ideal for you if you are involved with blasting activities, both in the underground and surface mining environments, as a contractor performing blasting activities on mine sites and civil excavations, personnel from explosives companies, suppliers of explosive products, senior management, and consultants to the mining industry.

Programme fees

R29 980.00 per delegate (VAT incl.)

Fees include all course materials, 3-D Virtual Reality session and refreshments.

Accreditation and certification

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Registration and enquiries

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Programme presenter

Wolter de Graaf

Wolter de Graaf obtained his B.Eng Mining Engineering degree in 1985 at the University of Pretoria. He completed his B.Eng (Hons) in 1989 at the same University. In 1993 he obtained a Diploma in Blasting Engineering and completed numerous certificates, such as South African Mine Manager's Certificate, Metalliferous surface, and underground blasting certificates. Wolter is registered as a PrEng with the Engineering Council of South Africa (ECSA).

After graduation in 1988, he joined Western Areas Gold Mine as a miner and a shift boss. From 1990 to 1992 he was employed by Rietspruit Open Cast Services, in Mpumalanga, south of Emalahleni, as a production foreman and planning officer.

Towards the end of 1992, Wolter joined African Explosives Limited, where he served in various portfolios within the company, including regional Technical Manager, Senior Projects Engineer, Area Sales Manager (Central Africa), Projects Manager and Regional Contracts Manager. After 18 years with AEL, Wolter decided to pursue a career with the Department of Mining Engineering at the University of Pretoria, as senior lecturer, a position he still currently holds. Wolter runs a consultancy company and has facilitated many drilling and blasting short courses throughout Southern and Central Africa.

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