

The University of the Witwatersrand
presents
SHORT COURSES
in

**COAL MINING, EXTRACTION AND
EXPLOITATION IN SOUTH AFRICA**

Five-day course or Daily attendance

17-21 May 2010

Module in the
Postgraduate Programme for Industrial Personnel
LEADERSHIP IN FUEL & ENERGY TECHNOLOGY

Hosted by
*School of Mining Engineering,
University of the Witwatersrand.*

Venue
*Sports Administration Building, Sturrock Park Campus,
University of the Witwatersrand*

Co Convenors
*Prof Bart Van de Steen, Anglo American/Wits
Prof Rosemary Falcon, Wits*

OBJECTIVES OF THE COURSE

The objectives of this course are to present

- An introduction to coal mining and extraction methods
- The impact of geological factors on mine planning, mine design and the selection of mining equipment
- The fundamentals of opencast and underground mining
- A review of small scale and subsistence mining and their issues
- Financial modelling in mine planning
- Environmental issues and rehabilitation
- Long term logistics, exports and production

OUTLINE OF THE COURSE

Topics include the following:

- Principles of coal extraction and exploitation including mining, storage, handling and dispatch

- Underground mining methods
- Opencast mining methods
- Mine planning and design
- Impact of geological features
- Resource and reserve assessment
- Legal and practical issues related to Mining rights
- Planning for closure
- Safety, health and environmental issues
- Methods of handling and transport –conveyors, pipeline, truck, train ocean-going vessels
- Storage mechanisms – long and short-term stockpiling, slurry ponds, discard materials including fines and duff
- Environmental impacts of storage - acid mine drainage, self heating, particulate emissions and their impact on health impact; weathering mechanisms and impact on coal quality
- Techno-economic impact of Southern Africa’s current and future coal reserves and methods for their future extraction and exploitation
- The course includes a visit to a mine with exposure to all aspects of mine operation.

MOTIVATION

With the increasing **demand for high quality coal products** for both export and domestic purposes, the currently prevailing **severe economic climate** and **increasing environmental pressures**, it has become necessary to expand the knowledge and awareness of the coal reserves and resources in South Africa and to improve **mining efficiencies and extraction potential**. These pressures apply equally to both junior and major mining companies.

It is also necessary to provide an overview of the legal framework and to have insight into the resources, reserves and qualities of coal more accurately than has been the case in the past, and the environmental impacts that the exploitation and utilisation of such commodities would have before, during and after mining.

The development of modern financial models is also required to significantly improve mine planning, production, extraction and beneficiation and to assess the viability of the operation as well as the marketability and utilisation of the ultimate products. For these reasons the course seeks

- ***To outline production geology and geological issues related to mine planning, coal extraction and beneficiation.***
- ***To present advances in extraction technologies as used in the underground and opencast mining of coal***
- ***To present issues related to surface structures, logistics and transportation, coal handling and stockpile management***
- ***To review environmental, social and legal issues***
- ***To review economic and financial considerations, investment criteria and the influence of the current economic situation in the world.***

WHO SHOULD ATTEND THIS COURSE

- Geologists

- Mining engineers and mine planners
- Mineral (coal) resource managers
- Coal processing engineers
- Marketing and trading personnel
- Industrial users of coal
- Engineering manufacturers
- Financial funding agencies
- Government and company policy planners
- Researchers and lecturers in academia.

COURSE PROGRAMME 1

DAY 1 – Monday 17 MAY 2010

COAL MINING – OPENCAST

The lecture gives the students an overview of the fundamentals of opencast mining and takes them through the process of method selection, designing a pit, selecting the equipment and scheduling the various activities. The lecture further touches on some rock engineering aspects as well as on rehabilitation planning

08:30 – 09:00 - Registration

09:00 – 10:00 – Fundamentals of opencast planning (Stripping Ratio; block ranking, boxcut criteria, Constraints. *Prof Bart Van de Steen, Anglo American/Wits*)

10:00 – 10:30 - Tea

10:30 – 11:30 - Market and Product selection. Method Selection (methods, criteria, examples) *Prof Bart Van de Steen, Anglo American/Wits*

11:30 – 12:15 – Equipment Selection. *Prof Bart Van der Steen, Anglo American/Wits*

12:15 – 13:00 - Activity Scheduling. *Prof Bart Van de Steen, Anglo American/Wits*

13:00 – 14:00 – Lunch

14:00 – 15:30 – Pit design and rock engineering aspects. *Prof Bart Van de Steen, Anglo American/Wits*

15:30 – 15:45 - Tea

15:45 – 16:30 – Rehabilitation planning. *Prof Bart Van de Steen, Anglo American/Wits*

16:30 – 17:00 - Discussions on the day's papers. *Prof Bart Van de Steen, Anglo American/Wits*

DAY 2 – Tuesday 18 May 2010

COAL MINING – UNDERGROUND

Fundamentals of underground mining, method selection, equipment selection, VOHE and safety. Mining Legislation and impact of mining on the environment.

08:30 - 09:00 *Registration*

09:00 – 10:30 **Mine management** for major mining ventures. Principles and practice in underground mines. Mine planning, extraction methods, handling and storage, health and safety and the coordination thereof. *TBA*

10:30 – 10:45 - Tea

10:45 – 13:00 **Mine management** for major and minor mining ventures. Principles and practice (cont) *TBA*

13:00 – 14:00 – Lunch

14:00 – 15:30 – **Ventilation and Occupational Health Engineering:** Environmental impacts of coal mining and storage - acid mine drainage, self heating and spontaneous combustion, particulate emissions and their impact on health; weathering mechanisms and impact on coal quality. *Dr Maryna Mohr Swart, Consultant ex Chamber of Mines tbc*

15:30-15:45 - Tea

15:45 – 17:00 **Junior coal mining issues** – size, up-front loading, information. *TBA*

DAY 3 – Wednesday 19 May 2010

INFRASTRUCTURE, LOGISTICS AND TRANSPORTATION.

Blue sky ideas on coal blasting to minimise fines; surface infrastructure including coal preparation; logistics and transportation; coal handling and stockpile management; spontaneous combustion; underground gasification.

08:30 - 09:00 - Registration

09:00 - 10:00 - Reducing coal fines when mining and extracting coal in open cast mines in Southern Africa. Blue sky ideas using different explosive combinations and their impact on costs of mining. *Mr Tom Rudd, Master Blaster tbc*

10:00 - 10:15 - Tea

10:15-11:30 – Impact of coal mining on coal preparation. *Mr Lionel Falcon. Wits*

11:30-13:00 – *Coal Transport and international trading. Mr Bill Lamont, Mhlatuze Coal tbc*

13:00 – 14:00 – Lunch

14:00 – 15:00 – *Coal stockpiling and spontaneous combustion. Prof R Falcon, Wits University*

15:00 – 15:15 – Tea

• **COAL MINING, EXTRACTION AND EXPLOITATION**

• **12 – 16 April 2010**

• **- REGISTRATION -**

• **FULL WEEK – R7 500-00+VAT = R8 550 per week Y/N**

• OR

• **DAILY ATTENDANCE - R1 650+VAT = R1 881 per day**

• DAY 1..... DAY 2..... DAY 3..... DAY 4..... DAY 5..... Y/N

• Email registration to: **MRS L STEPHENSON**. VAT No: **4270185251**

• Tel 011 447 1490 Cell: 083 679 0697

• Email: **lstephenson@mweb.co.za**

• **NAME:.....TITLE.....**

• **AFFILIATION**

• **COMPANY.....**

• **ADDRESS.....**

• **TEL:.....FAX.....EMAIL:.....**

• **ACCOUNTS CONTACT PERSON.....**

• **ACCOUNTS TEL NUMBER..... EMAIL.....**

• **FFF MEMBERSHIPYes/No..... Membership No.....**

• **COMPANY VAT NO:**

• **NB: ATTENDANCE IS STRICTLY SUBJECT TO PAYMENT PRIOR TO THE COURSE**

• **BANKING DETAILS: *Please fax a copy of the deposit slip to EFT to (011) 447 6148 or email address***

• Account name: Fossil Fuel Foundation

• Bank: ABSA

• Branch Code: 632 005

• Account No: 919 978 4837

• Ref: **PLEASE USE YOUR NAME OR INVOICE NUMBER ON THE EFT OR DEPOSIT SLIP**

• **CANCELLATION OF THIS REGISTRATION**

• Cancellation may be made in writing 7 days prior to this course, whereon a 25% cancellation fee will be charged. No refund or credit will be issued within the 7 days of the course. Registrations are transferable. Invoices will be sent once registration forms have been submitted. **KINDLY NOTE: ATTENDANCE IS STRICTLY SUBJECT TO PRIOR PAYMENT**