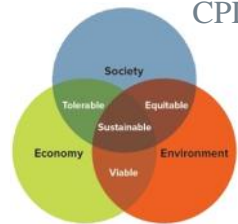


CPD Course | Coordinated by the Continuing Professional Development Programme (CPD)



Introducing Sustainability Thinking Into Mineral Processing and Extractive Metallurgy

Maximising Profitability, Advancing Sustainable Development;
Technical Solutions to solving the paradox for the mining industry.

18th to 19th November 2019

Course Objectives



Globally, the mining industry is under tremendous pressure to improve its social, developmental, and environmental performance while still achieving the traditional balancing of production targets with cost control. While most mining and mineral processing companies have endorsed sustainability principles and objectives, mineral process engineers and design engineers remain with the challenges of developing mechanisms that will allow them to implement the changes either into their new plants or to retrofit them into existent operations. This calls for researchers and engineers to provide innovative solutions needed to address key sustainability issues, such as those related to minimal environmental impacts, reduced carbon footprint, social licence to operate and supply chain management among other things. This course covers different operations in mineral processing and extractive metallurgy with a focus on running sustainable mineral processing and extractive metallurgy operations. The course will run accompanied with a narrative on how achieving processes embedded in sustainability principles could see the mining and mineral processing industry which is often perceived to be linear, being run to advance principles of a circular economy.

Course Content

The contents of the course will include:

- The role of characterisation of physical, mineralogical and mechanical properties of particles in achieving sustainability in mineral processing
- Improving flotation and comminution efficiency through particle characterisation
- Energy efficiency in mineral processing
- Mineral processing to improve sustainability and efficient use of water
- Mineral processing technologies for mining 4.0
- Skills for the future, education and skills for mineral processing engineers
- Challenges of the circular economy (minerals, material, metallurgical, and product design)
- Current progress and industrial challenges in particle comminution and flotation

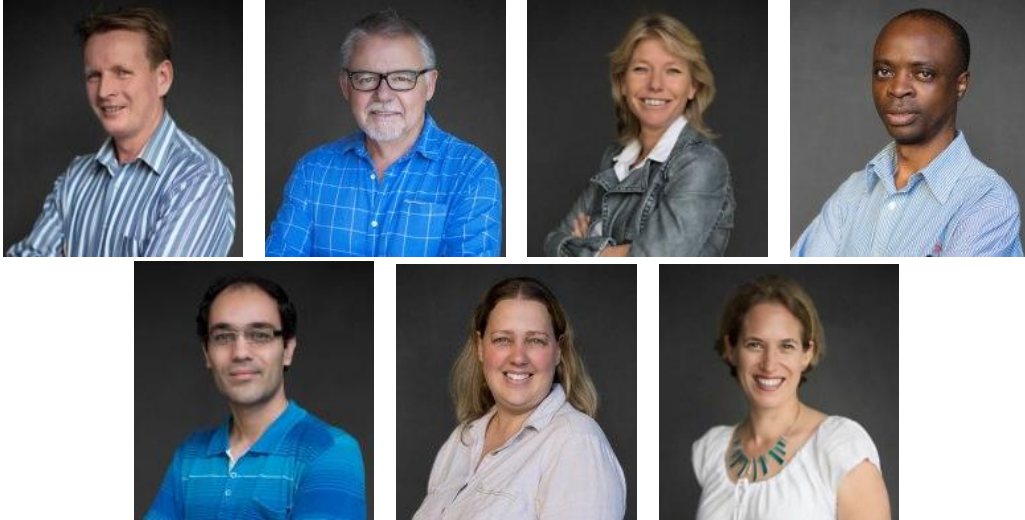
Who Should Attend

The course will look at different operations in mineral processing and extractive metallurgy through the sustainability lens. Therefore this course will be of benefit to qualified practitioners and post graduate students who work in minerals beneficiation or extractive metallurgy. The course will also be useful as an overview program for those working in the minerals industry.

Course Presenters

The course will be present by lecturers from Universities of Cape Town (South Africa), Helmholtz Institute Freiberg for Resource Technology (Germany), Luleå University of Technology (Sweden), Central South University (China) and University of Stellenbosch (South Africa). The course will be given by fifteen presenters with internationally-leading expertise in their own speciality fields.

The Centre for Minerals Research, University of Cape Town (South Africa)
Prof. David Deglon, Prof. Jeremy Mann, Dr Belinda McFadzean, Prof. Aubrey Mainza
Dr Mehdi Safari, A/Prof. Kirsten Corin, A/Prof. Megan Becker



Minerals to Metals, University of Cape Town (South Africa)
Prof. Jochen Petersen, A. Prof. Jennifer Broadhurst, Dr Thandazile Moyo



Prof. Markus Reuter, Helmholtz Institute Freiberg for Resource Technology, Germany
A. Prof. Yousef Ghorbani, Luleå University of Technology, Sweden
A. Prof. Zhiyong Gao, Central South University (CSU), China
Alexey Cherkaev, University of Stellenbosch, South Africa



Course Overview

Name	Introducing sustainability thinking into mineral processing and extractive metallurgy
Duration	18 th to 19 th Nov 2019, 8:30-17:00
Venue	Garnet Room, 2 nd Floor, New Engineering Building, Upper Campus, UCT, SA.
CPD	2 CPD points, ECSA Validation No: UCTPFC19
Participants	Minerals processing engineers, metallurgist, mineralogist, qualified practitioners, scientists, research fellows, SD specialist, postgraduate students.
Course dinner	Registration to the course include a course dinner
Fees*	Standard delegate: R7000 (This fee includes a comprehensive set of course notes and refreshments. A discount is available for local participants and students)

Lecture Programme

Monday 18 Nov: Ore Characterisation to Unlock Mineral Value

08:30 *Registration and Coffee*

08:45 Introduction

Prof. David Deglon, Director - The Centre for Minerals Research, University of Cape Town

09:15 Introducing sustainability thinking into mineral processing and extractive metallurgy

A. Prof. Jennifer Broadhurst, Deputy Director - Minerals to Metals, University of Cape Town

10:15 *Coffee*

10:45 Mineralogical properties of particles (Mineralogical characterisation)

A. Prof. Megan Becker, University of Cape Town

11:45 The effect of particles surface properties on flotation (Particles surface characterisation)

A. Prof. Zhiyong Gao, Vice-Dean of the School of Mineral Processing and Bioengineering at Central South University (CSU), China

12:45 *Lunch*

13:30 The answer to more sustainable metal recovery? (Hydrometallurgy)

Prof. Jochen Petersen, Director - Minerals to Metals, University of Cape Town

14:30 Particle shape characterisation in mineral processing (Flotation and comminution)

Dr Mehdi Safari, University of Cape Town

15:30 *Coffee*

15:45 **Mineral structure and molecular structure of the reagents: Two driving factors for innovative process development in mineral and metallurgical processing**

A. Prof. Yousef Ghorbani, Luleå University of Technology, Sweden

16:45 **Discussion on education and skills for the future of mineral processing engineers (Closing Remarks – Day One)**

Dr Mehdi Safari and Dr Thandazile Moyo, University of Cape Town

17:30 **Lab Tour - Visiting Different Laboratory in Department of Chemical Engineering, University of Cape Town (Optional)**

Dr Mehdi Safari, University of Cape Town

Tuesdays 19 Nov 2018: Challenges and Opportunities

08:30 **Industrial challenges in comminution/Current technologies on comminution**

Prof. Aubrey Mainza, HoD - Department of Chemical Engineering, University of Cape Town

09:30 **The Industrial Challenge: Translating Boardroom and Public Reporting “Sustainability” rhetoric into “sustainable minerals processing” reality**

Prof. Jeremy Mann, Project Manager for AMIRA International

10:30 *Coffee*

11:00 **Challenges of the circular economy: A minerals, material, metallurgical, and product design perspective**

Prof. Markus Reuter, Director - Helmholtz Institute Freiberg for Resource Technology, Germany

12:00 **Industrial challenges in flotation**

Dr Belinda McFadzean, University of Cape Town

12:45 *Lunch*

13:30 **Efficient use of water in mineral processing**

A. Prof. Kirsten Corin, University of Cape Town

14:15 **Hydrometallurgy; Current trends in industry**

Dr Thandazile Moyo, University of Cape Town

15:00 **Energy efficiency in mineral processing**

Prof. David Deglon / Dr Mehdi Safari, University of Cape Town

15:45 *Coffee*

16:00 **Finding gold nuggets in data: using machine learning for sustainable mineral processing**

Alexey Cherkaev, University of Stellenbosch

17:00 **Discussion on mining/mineral processing and circular economy (Closing Remarks – Day Two)**

Dr Mehdi Safari and Dr Thandazile Moyo, University of Cape Town

Registration

Registration and Cancellation

In order to ensure a place on the course (limited to 17 participants), applicants must complete and return a signed application form to the course administrators: Heidi Tait or Sandra Jemaar.

-) [Register for this course](#)
-) Registration covers attendance of all sessions of the course, refreshments, and course material. Discounts are available for local participants and for group bookings (three or more delegates).
-) Registration closes one week before the start of the course. Confirmation of acceptance will be sent on receipt of a registration form.
-) Cancellation must be received one week before the start of a course, or the full course fee will be charged.
-) **For more information on application and registration procedures, please visit our website: www.cpd.uct.ac.za**

Certificates and CPD Points

A certificate of attendance will be awarded to CPD participants. Participants need to attend 80% of the lectures to qualify for an attendance certificate. The course is registered with the Engineering Council of South Africa, and is accredited for the award of 2 CPD points, which are now required for continuing professional registration. The ECSA course code for this course is UCTPFC19.

CPD participants can also request a formal university transcript, which will show this course as part of a Professional Development Career.

Contact details

For more information or details on CPD courses, visit our website or contact us.

For technical queries, please contact :

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CPD Programme, EBE Faculty, University of Cape Town, Private Bag X3, Rondebosch 7701, South Africa

Programme administrators

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Heidi Tait: +27 (0)21 650 4922