Rio Tinto-UWA Masterclass Program

Rio Tinto - UWA Masterclass Program 2014
This program is part of the Rio Tinto – UWA Education Partnership.
The partnership enhances opportunities for undergraduate science and
engineering students in collaboration with postgraduate students.

These Masterclasses provide an opportunity for talented students to interact with international academics and Rio Tinto subject matter experts in a collaborative learning environment on topics of importance to industry.

Who can enrol?
- 15 places are available for UWA undergraduate / coursework students (Level 2 to 4).
- 5 places are available for UWA postgraduate students (Masters (Level 5), Research Masters or PhD).
- Students will attend both Masterclasses in 2014.
- There is no requirement for specific knowledge of the topics covered in either of the two Masterclasses.
- A bursary of $300 will be provided to each student selected in the 2014 Rio Tinto-UWA Masterclass Program (which will be paid after completion of both masterclasses).

Semester 1, 2014
Groundwater and Rivers
with Professor Peter Cook,
CSIRO Land and Water & Deputy Director, National Centre for
Groundwater Research and Training, Flinders University, and with
Dr Shawan Dogramaci, Principal Hydrogeologist, Resource Development - Water Resource Evaluation, Rio Tinto Iron Ore

Date: Monday 5th May 2014
Time: 9.00am – 5.00pm
Venue: University Club

Public Lecture
11 August 2014
Mike Harris, Technical Director Rio Tinto Business Development Group, will give the Rio Tinto-UWA Public Lecture on 11 August, 6pm in the University Club Theatre Auditorium at The University of Western Australia.

This event is sponsored by Rio Tinto, the Faculty of Science and the Institute of Advanced Studies at The University of Western Australia.

Semester 2, 2014
The moral case for mining – is it a question the industry can answer?
with Mike Harris, Technical Director, Rio Tinto Business Development Group, London

Date: Tuesday 12 August 2014
Time: 9.00am – 5.00pm
Venue: University Club

Applications for participation close on Thursday 17th April 2014
To apply, complete and submit the application form printed on the back of this form.
Rio Tinto - UWA Masterclass
Semester 1 2014

Groundwater and Rivers
with Professor Peter Cook (CSIRO and National Centre for Groundwater Research, Flinders University) and Dr Shawan Dogmaraci (Rio Tinto Iron Ore).

Date: Monday 5th May 2013
Time: 9.00am – 5.00pm
Venue: University Club

Students accepted into the 2014 program will attend a brief pre-meeting for this Masterclass on 28 April.

In this masterclass, students will explore the interaction between rivers and groundwater. As concerns over water resources and the environment increase, it has become apparent that groundwater and surface water need to be considered as a single resource rather than as separate resources. In many areas, groundwater flow feeds our river systems and maintains streamflow during periods of low rainfall. There are now many examples from around the world where exploitation of groundwater has led to drying up of wetlands and lakes. In other areas, however, infiltration of water from rivers maintains the groundwater resource – particularly in arid areas where groundwater can be scarce. Interaction between groundwater and rivers is also important for water quality. Contaminated aquifers that discharge to streams can result in long-term contamination of surface water. Streams can also be a major source of contamination to aquifers.

There is often a time lag of many years between the commencement of groundwater pumping and the impact on a surface water system. Management of water resources, whether for urban use, irrigation or mining development, requires a detailed understanding of how much water is available, and how much is used by the environment.

It also requires an understanding of the interaction between surface water and groundwater resources. Although we are now aware of the need to consider the interaction between groundwater and surface water, we do not have accurate figures on how much river water is derived from groundwater, or how much groundwater is derived from river infiltration. This is currently an active area of research.

**Professor Peter Cook** holds joint positions as Senior Principal Research Scientist with CSIRO, and Professor of Hydrogeology at Flinders University. He is also Deputy Director of the National Centre for Groundwater Research and Training (NCGRT) – a consortium comprising 22 Australian and international groundwater research and industry organisations working on groundwater.

His research focuses on understanding groundwater flow, and the interaction between groundwater and the environment. One of Australia’s foremost groundwater scientists, Professor Cook has almost 30 years of experience in groundwater research. He has co-written books on environmental tracers and ecohydrology, and has published more than 60 research papers in leading international journals. He was the United States National Ground Water Association’s Henry Darcy Distinguished Lecturer in Ground Water Science in 2009, the first time this honour has been awarded to a scientist from outside North America.

**Dr Shawan Dogmaraci** has over 25 years of experience in research, academia and consultancy. His research has focused in water resources appraisal, isotope hydrology and hydrochemistry. He has worked with the CSIRO and state water authority in Australia overseeing water and land resources salinisation research and remedial projects. Shawan has also worked as international consultant for United Nations International Atomic Energy Agency overseeing the preparation and publication of the Water Resources Atlas for the African Continent.

As Principal Hydrogeologist with Rio Tinto Iron Ore, Shawan focuses on the utilisation of isotopic and hydrochemical data to constrain conceptual hydrogeological and numerical models to address water management issues such as open pit dewatering, surplus water management, mine closure, and cumulative impacts of multiple mine operations in Pilbara. He is also Adjunct Senior Lecturer at UWA and a Board Member of The John De Laeter Centre for Isotope Research at Curtin University.

Pre-session reading (required):
Rio Tinto - UWA Masterclass Semester 2 2014

The moral case for mining – is it a question the industry can answer?
Mike Harris, Technical Director, Rio Tinto Business Development Group, London

Date: Tuesday 12th August 2014
Time: 9.00am – 5.00pm
Venue: University Club

Students accepted into the 2014 program will attend a brief pre-meeting for this Masterclass on 29th July.

In this masterclass, Mike Harris will explain his concept of the morality of mining, which he sees as the next stage in terms of competitive advantage for mining companies. “Governments are becoming increasingly aware of their ability to ensure that mining companies distribute profits more evenly and guarantee better husbandry of the orebodies in their jurisdictions. Companies and organisations that understand and practice that will increasingly place themselves ahead of the pack.”

The context is that the global demand for raw materials is rising and companies in the mining industry need to develop strategies with the wider community in moving forward. Although the supply of metals and minerals is considerable, there are important questions related to the risk of intermittent shortage, vulnerability to supply from some regions, and debates about “Peak metal” and the scale of operations in environmentally or politically sensitive regions.

Students will investigate challenging questions related to issues such as:
• ownership of the Earth’s resources,
• who is empowered to licence their depletion,
• the flow of benefits from depletion of irreplaceable natural resources,
• equity of access to the supply of the mineral resources,
• how the world population should share in prosperity flowing from utilisation of mineral resources, how mining coexists with ecosystems, and
• whether or not the global mining industry is sufficiently engaged in these moral questions.

Mike Harris is Technical Director for Rio Tinto’s Business Development group in London. He has 32 years of service with Rio Tinto in exploration and leadership roles. He has degrees from Tulane University (BSc Geology), Stanford University (MSc Ore Deposits) and the Royal School of Mines, Imperial College London (PhD). He is a Fellow of the Society of Economic Geologists and a Fellow of the Geological Society (London). In 2013, he was announced as a Visiting Professor in the Department of Earth Science & Engineering at Royal School of Mines, Imperial College London.
Application Form

Selection Criteria:
Academic Merit (50%) and Statement of Reason for Participation (50%)

YOUR APPLICATION IS DUE ON 17th APRIL 2014

Name: 
__________________________________________________________

Address: 
__________________________________________________________

Email: 
__________________________________________________________

Phone: 
__________________________________________________________

UWA Student Number: 
__________________________________________________________

Enrolment details (Degree, Major, etc): 
__________________________________________________________

Statement of up to 400 words explaining why you wish to participate in the two Rio Tinto - UWA Masterclasses in 2013: 
__________________________________________________________

Submit applications to:
Emeritus Professor Lyn Abbott
School of Earth and Environment,
The University of Western Australia
(M087) 35 Stirling Hwy
Crawley WA 6009
or email to lynette.abbott@uwa.edu.au