



## Geological Investigations

NTU CEE Seminar Room D, Block N1, Level B4 (N1-B4c-09b)

Wednesday & Thursday, 30 & 31 January 2013

9.00 AM – 5.00 PM

### REGISTRATION FEE

**SRMEG members:**  
\$700.00 per person

**Non-members:**  
\$750.00 per person

*(Registration fee covers  
workshop handouts, tea  
breaks, and lunches)*

**PDU: TBA**

**STU: TBA**

### COURSE OBJECTIVES

The course deals with rock engineering problems for underground structures. Lectures during the first day contain an introduction on the sequence of a structured geotechnical design, investigation methods, ground characterization, and geotechnical hazards.

During the second day a current Austrian rail tunnel project is introduced (Semmering basis tunnel, length around 25km, overburden up to 800m), which is characterized by extremely heterogeneous ground conditions. The construction work will start later this year. With the help of real project data a hands-on exercise in characterizing rock masses, evaluating ground behaviours, and determining excavation and support methods is conducted. Both lecturers have been deeply involved in the investigation and design of the project over several years.

### SPEAKERS' PROFILES

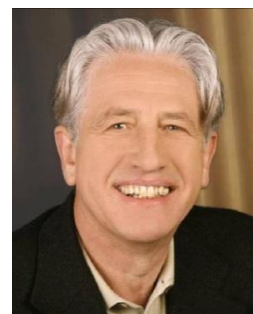
#### Prof Wulf Schubert

Wulf has 30 years of professional experience in tunnelling. After working for GEOCONSULT mainly on tunnel projects around the world for more than 12 years, he was appointed full professor at the Graz University of Technology for Rock Mechanics and Tunnelling in 1992. His focus in research during the last 15 years was on tunnelling in poor ground. In this time he produced more than 100 publications. Parallel to the research and teaching, he has continued with consulting to keep up with the day to day problems, having been involved in design, construction supervision, and consulting for underground projects in Austria, Germany, Italy, Spain, Greece, Turkey, Iran, Slovenia, Korea, Taiwan, Thailand, Hong Kong, China, Nigeria, Pakistan, Venezuela, USA, Brasil, Argentina, Chile, Bolivia (totalling approx. 1,200 km of tunnels). He is a Senior Partner in the engineering company Gruppe Geotechnik Graz. He has served as Vice President for the ISRM, is active in various working groups in the ISRM and ITA, and currently serves as President of the Austrian Society for Gomechanics, and Editor of the journal FELSBAU.



#### Prof Kurt Klima

Kurt was born in 1950 in Salzburg, and studied Geology at Graz University. He finished his studies with the degree of "Dr.phil." in 1980. Since 1979 he has been with the Institute of Applied Geosciences at Graz University of Technology, and since 1992 in the position as Assistant Professor. The main fields of research are faults and the wide field of rock mass characterisation. Since 1999 he is Professional Engineer and senior partner in the 3G Gruppe Geotechnik Graz ZT GmbH geotechnical consulting company. Besides the research activities, Kurt Klima was involved in many tunnelling and hydropower projects in Austria and abroad (mainly in China and South America).



Please send Registration Form and Payment to:

SRMEG Secretariat

1 Liang Seah Street #02-11 Liang Seah Place Singapore 189022

Phone: +65 6336 2328 Fax: +65 6336 2583

Email: [srmeg@cma.sg](mailto:srmeg@cma.sg) Website: [www.srmeg.org.sg](http://www.srmeg.org.sg)



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### COURSE TIMETABLE

Wednesday, January 30th, 2013		
9:00 AM	Introduction	Course organization
9:30 AM	Project organization	Geotechnical project work flow
10:00 AM	Rocks and discontinuities	Rock: types, characteristics, properties; Discontinuities: genesis, types, properties
11:30 AM	Faults and fault material	Investigation, characterization and hazard
12:30 PM	Lunch break	
2:00 PM	Rock Mass	Determination of rock mass properties, influence of rock structure on strength and deformation Failure mechanisms in blocky rock masses
4:00 PM	Field investigation	Investigation methods; field mapping, boreholes, borehole tests, geophysical methods, geological modelling
5:00 PM	End of lecture	

Thursday, January 31st, 2013		
9:00 AM	Case study: Semmering rail tunnel, Austria	Introduction to project, geology, ground investigation
11:00 AM	Geotechnical tunnel design	Principle, ground types, stresses, ground behaviour
12:30 PM	Lunch break	
2:00 PM	Exercise course: Ground types and ground behaviour	Defining ground types and types of ground behaviour from Semmering project data
4:00 PM	Exercise course: Excavation and support	Determination of excavation and support methods based on ground behaviour from Semmering project data
5:00 PM	End of lecture	

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### REGISTRATION FORM

<b>Title:</b> *Prof / Dr / Mr / Mrs / Mdm / Ms <b>Full name:</b> (underline Surname / Family name)		
<b>SRMEG Membership No:</b>		
<b>Organisation:</b>		
<b>Mailing Address:</b>		
<b>Telephone:</b>	<b>Mobile:</b>	<b>Fax:</b>
<b>Email:</b>		

**SRMEG members:** \$700.00 per person     **Non-members:** \$750.00 per person

*Registration is on a first-come-first serve basis. All registrations must be accompanied by cheque payment before the course commences. No cancellation or refund is allowed upon registration, only a replacement of name is acceptable.*

#### Method of Payment

By Bank Draft / Cheque in Singapore dollars drawn on a bank in Singapore and made payable to: **“Society for Rock Mechanics and Engineering Geology”**

Issuing Bank : \_\_\_\_\_ Bank Draft / Cheque Number : \_\_\_\_\_

By Credit Card. Please deduct the above amount from my:

Visa       Master       Amex

Name on Credit Card : \_\_\_\_\_

Card number : \_\_\_\_\_

Expiry Date (MM/YY) : \_\_\_\_\_

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

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