Education and Training Curriculum
Course Catalog 2015

▲ Mentorship
▲ Education
▲ Opportunity
▲ Exploration
▲ Discovery

SOCIETY OF ECONOMIC GEOLOGISTS
Welcome to the SEG Education and Training Curriculum!

The Education and Training Committee was established in 2012 and, under the chairmanship of successive President-Elects and the management of coordinator Elizabeth Holley, has brought a new objectivity to the delivery of the spectrum of workshops, short courses, and field trips that are such an important element of the Society’s activities today. These events are hosted at various venues, including the Society’s excellent facilities in Littleton, and are often integrated with major conferences that are supported to various degrees by the Society. The major SEG conference this year is to be held in Hobart in September and the planning for the September-2016 conference in Izmir, Turkey, is also already well underway. The locations of these two conferences alone give some insight to the Society’s growing global reach and it is the E&T Committee’s intention to extend this reach within geographic regions where the opportunities to develop skills in mineral deposit geology and exploration remain limited. We anticipate using our regional representation reflected by our Regional Vice Presidents, as well as seeking the guidance of senior industry members, to identify new venues and new opportunities that will benefit our widening geographic membership. The results of this growing outreach will become progressively more evident but in the meantime don’t just “watch this space” — please let us have your ideas for new courses and workshops and where you would like to see them held. All comments and suggestions will be welcomed by the Committee’s coordinator — elizabethholley@segweb.org.

At this early stage of the year the 2015 Curriculum already comprises nine short courses and workshops, commencing with the Short Course on the Geology of Gold Deposits to be held immediately before the African Mining Indaba in Cape Town, and leading up to the SEG conference in Hobart — “World-Class Ore Deposits: Discovery to Recovery”. A number of other events and new initiatives are at the planning stage — so please consult the SEG website for the latest information, and the SEG Newsletter will also provide updates and details of specific courses.

The breadth and quality of what is on offer is substantial — so please take advantage of these learning opportunities, not losing sight of the professional contacts and friendships that are always a wonderful bonus of participation.

Bob Foster

President Elect, Education and Training Committee Chair
Contents

Preliminary 2015 Education and Training Curriculum ................................................................................................. 4–5
SEG — Short Course on the Geology of Gold Deposits ............................................................................................... 6
SEG/PDAC — Geology of Copper: Porphyry Copper, IOCG and Sedimentary Rock-Hosted Stratiform Copper Deposits ........................................................................................................... 7
SEG/PDAC — Structural Geology of Gold and Copper Deposits, with Emphasis on Ores in Continental Margin Tectonic Settings ..................................................................................................... 8
SEG — Geology of Granite-Greenstone Terranes and Their Mineral Deposits ......................................................... 9
UNESCO-SEG-SGA — XXXIII Curso Latinoamericano de Metalogenia ........................................................................... 10
SEG/Newmont — Workshop on Orogenic Gold ................................................................................................................ 10
SEG — The Geology and Geochemistry of Gold Deposits Workshop ......................................................................................... 11
SEG 2015 Conference — World-Class Ore Deposits: Discovery to Recovery ............................................................... 12–19
SEG/WM — Senior Exploration Management Course ................................................................................................ 20–21
The following is a list of courses and field trips scheduled for 2015. SEG reserves the right to cancel courses or modify speakers, topics, and locations.

Official registration information will be available about three months prior to the courses. Visit segweb.org/events for the latest updates on courses and events!

<table>
<thead>
<tr>
<th>SEG Course Name</th>
<th>SEG Course Dates</th>
<th>Conference Dates</th>
<th>Venue</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geology of Gold Deposits</td>
<td>February 7–8</td>
<td>February 9–12</td>
<td>University of Goldfarb, Frimmel, Simmons, Rusk</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>University of Cape Town, S. Africa pre-Mining Indaba</td>
<td></td>
</tr>
<tr>
<td>Geology of Copper: Porphyry Copper, IOCG, and Sedimentary Rock-Hosted Stratiform Copper Deposits</td>
<td>February 27–28</td>
<td>March 1–4</td>
<td>PDAC Toronto, Canada</td>
<td>Sillitoe, Hitzman</td>
</tr>
<tr>
<td>Structural Geology of Gold and Copper Deposits, With Emphasis on Ores in Continental Margin Tectonic Settings</td>
<td>February 27–28</td>
<td>March 1–4</td>
<td>PDAC Toronto, Canada</td>
<td>Rhys, Richards</td>
</tr>
<tr>
<td>SEGF Student Field Trip: Copper-Gold-Silver-Molybdenum Metallogeny of Northern Chile</td>
<td>March 6–14</td>
<td></td>
<td>Chile</td>
<td>Chávez, Petersen</td>
</tr>
<tr>
<td>Geology of Granite-Greenstone Terranes and Their Mineral Deposits</td>
<td>May 2–3</td>
<td>May 3–7</td>
<td>McGill, Montreal, Canada pre-GAC-MAC</td>
<td>Gibson, Poulsen, Robert</td>
</tr>
<tr>
<td>XXXIII UNESCO-SEG-SGA Latin American Metallogeny</td>
<td>July 1–9</td>
<td></td>
<td>Brazil, South America</td>
<td>Xavier</td>
</tr>
<tr>
<td>SEG-Newmont Short Course and 1 day Field Trip</td>
<td>August 15–16</td>
<td></td>
<td>Sunyani, Ghana, Africa</td>
<td>Goldfarb</td>
</tr>
<tr>
<td>The Geology and Geochemistry of Gold Deposits Workshop</td>
<td>August 22–23</td>
<td>August 24–27</td>
<td>SGA, Nancy, France</td>
<td>Goldfarb, Simmons</td>
</tr>
<tr>
<td>Pre- and Post-Short Courses at SEG 2015 Conference</td>
<td>See list below</td>
<td>September 27–30</td>
<td>Hobart, Tasmania, Australia</td>
<td>Cline, Muntean</td>
</tr>
<tr>
<td>Carlin-type Gold Deposits: Tectonic Setting, Orebodies, Footprints, Exploration, and Genetic Models</td>
<td>September 26–27</td>
<td></td>
<td>University of Tasmania, Hobart, Tasmania, Australia</td>
<td>Thomas, Zaluski, Large, Kotzer, Fitzpatrick</td>
</tr>
<tr>
<td>Uranium Geology</td>
<td>September 26–27</td>
<td></td>
<td>Wrest Point Hotel, Hobart, Tasmania, Australia</td>
<td>Large, Konhauser, McGoldrick, Long, Maslennikov, Farquhar, Lyons</td>
</tr>
<tr>
<td>Ore Deposits, Atmosphere Oxidation and Evolution of Life; How They are Related, New Genetic &amp; Exploration Insights</td>
<td>September 26–27</td>
<td></td>
<td>University of Tasmania, Hobart, Tasmania, Australia</td>
<td>J. Thompson, A. Thompson, B. Gemmell, J. Lang, A. Davies</td>
</tr>
<tr>
<td>Understanding Alteration – Use in Exploration and Development</td>
<td>September 26–27</td>
<td></td>
<td>University of Tasmania, Hobart, Tasmania, Australia</td>
<td>J. Thompson, A. Thompson, B. Gemmell, J. Lang, A. Davies</td>
</tr>
<tr>
<td>Skarn Deposits</td>
<td>September 27</td>
<td></td>
<td>Wrest Point Hotel, Hobart, Tasmania, Australia</td>
<td>Chang, Meinert</td>
</tr>
<tr>
<td>SEG Course Name</td>
<td>SEG Course Dates</td>
<td>Conference Dates</td>
<td>Venue</td>
<td>Presenter(s)</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>------------------</td>
<td>--------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Drill Core Measurements and Domaining for Geometallurgy</td>
<td>October 1</td>
<td></td>
<td>University of Tasmania, Hobart, Tasmania,</td>
<td>Hunt, Berry, Roach</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Exploratory Data Analysis with Open Source Tools</td>
<td>October 1</td>
<td></td>
<td>Wrest Point Hotel, Hobart, Tasmania,</td>
<td>Krzys</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Faults, Fractures, Fluid Flow and Mineralizing Scenarios – Active and Ancient</td>
<td>October 1–2</td>
<td></td>
<td>Wrest Point Hotel, Hobart, Tasmania,</td>
<td>Sibson</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Aeromagnetic Interpretation</td>
<td>October 1–2</td>
<td></td>
<td>Wrest Point Hotel, Hobart, Tasmania,</td>
<td>Cook</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Pre- and Post-Field Trips at SEG 2015 Conference</td>
<td>See list below</td>
<td>September 27–30</td>
<td>Hobart, Tasmania, Australia</td>
<td></td>
</tr>
<tr>
<td>Archean World-Class Gold and Nickel Camps from the Kalgoorlie Terrane (Yilgarn</td>
<td>September 22–25</td>
<td></td>
<td>Departs from and returns to Kalgoo...</td>
<td>McCuaig, Fiorentini, Thebaud</td>
</tr>
<tr>
<td>Craton, Western Australia)</td>
<td></td>
<td></td>
<td>Kalgoorlie, WA, Australia</td>
<td></td>
</tr>
<tr>
<td>VHMS and Granite-Related Ore Deposits of Western Tasmania</td>
<td>September 22–27</td>
<td></td>
<td>Departs from and returns to Wrest Point...</td>
<td>McNeill, Gemmell, Bottrill</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hotel, Hobart, Tasmania, Australia</td>
<td></td>
</tr>
<tr>
<td>Deposits of the Gold-Rich Ordovician Alkaline Porphyry and Epithermal Province</td>
<td>September 23–25</td>
<td></td>
<td>Departs from and returns to Orange, NZW,</td>
<td>Harris, Fox</td>
</tr>
<tr>
<td>Macquarie Arc, New South Wales</td>
<td></td>
<td></td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Introduction to the Olympic Dam Supergiant Iron Oxide Copper Gold Deposit, South</td>
<td>October 1–3</td>
<td></td>
<td>Departs from and returns to Adelaide, SA,</td>
<td>Ehrig</td>
</tr>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Porphyry and Epithermal Systems of the Sunda Banda Arc, Indonesia</td>
<td>October 1–8</td>
<td></td>
<td>Departs from and returns to Bali, Indonesia</td>
<td>Cooke, Maryono</td>
</tr>
<tr>
<td>Active and Extinct Epithermal Environments of the North Island, New Zealand</td>
<td>October 2–7</td>
<td></td>
<td>Departs from and returns to Auckland, New</td>
<td>Simmons, Christie</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zealand</td>
<td></td>
</tr>
<tr>
<td>Historic Sykesville Pre-Conference Field Trip</td>
<td>October 31</td>
<td>GSA 2015 November</td>
<td>Baltimore, MD, USA</td>
<td>Candela, Piccoli, Wylie</td>
</tr>
<tr>
<td>Placer Deposits of the Atlantic Coastal Plain Post-Conference Field Trip</td>
<td>November 5–6</td>
<td>GSA 2015 November</td>
<td>Baltimore, MD, USA</td>
<td>Berquist, Karst, Shah</td>
</tr>
<tr>
<td>Mineral Deposits Workshop</td>
<td>November 9–14</td>
<td></td>
<td>Xi’an, China</td>
<td>Scott, Goldfarb et al.</td>
</tr>
<tr>
<td>Senior Exploration Management Course</td>
<td>December 1–4</td>
<td></td>
<td>SEG Course Center, Littleton, Colorado,</td>
<td>Western Mining Services staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>USA</td>
<td></td>
</tr>
</tbody>
</table>

Please note that the 2015 calendar is provisional. Dates, locations, and courses subject to change. For up-to-date information, see www.segweb.org/events.
Short Course on the Geology of Gold Deposits

The University of Cape Town | Rondebosch, South Africa
February 7–8, 2015

DESCRIPTION
SEG is again offering its highly successful Gold Workshop at the University of Cape Town on February 7–8, 2015, the weekend prior to the Mining Indaba meeting. The course will focus on the distribution, geology, important characteristics (geochemistry, geophysics, structure, alteration, mineralogy), genesis, and exploration criteria of the most important gold deposit types. Industry geologists, as well as upper level undergraduate and graduate students in economic geology, will find the course relevant and useful.
Deposit examples include material from Africa and throughout the world.
This course fills up quickly—we recommend registering early for the 2015 event!

REGISTRATION
Online at segweb.org/events#15RGOLDUCT

Early Registration (through January 15, 2015)
Member: US$895
Non-member: US$995
Student: US$395
Student Non-member: US$445

Late Registration (after January 15, 2015)
Member: US$995
Non-member: US$1095
Student: US$445
Student Non-member: US$495

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by January 15, 2015. For further information on cancellation policy, event photography, and dietary restrictions, visit www.segweb.org/tc.

PRESENTERS

- Richard J. Goldfarb
  Senior research geologist with the U.S. Geological Survey. His major expertise is in the area of the geochemistry and geology of ore deposits, with emphasis on Phanerozoic orogenic gold.

- Stuart F. Simmons
  Research Professor at EGI-University of Utah and Consulting Geoscientist at Hot Solutions with more than 30 years of research experience on hydrothermal processes, epithermal mineralization, and geothermal resources.

- Hartwig Frimmel
  Professor at the University of Würzburg, Germany and honorary research associate of the University of Cape Town; his research focuses on the Witwatersrand goldfields and the interplay between tectonics, paleoclimate, ocean chemistry, and ore mineralization.

- Brian Rusk
  Research associate at Western Washington University, in Bellingham, Washington; he specializes in mineral geochemistry and fluid inclusion microanalysis of hydrothermal fluids in ore-forming environments, particularly in IOCG and porphyry Cu (Au-Mo) deposits.
Geology of Copper: Porphyry Copper, IOCG and Sedimentary Rock-Hosted Stratiform Copper Deposits
Friday & Saturday, February 27–28, 2015 | 8:00 am–5:00 pm

DESCRIPTION

This course will offer a practical introduction to porphyry copper systems, including the shallow epithermal environment, with particular emphasis on the geometry, variability, and evolution of the resulting mineralization styles. Topics to be addressed include multiphase porphyry intrusion; alteration, sulfide, and metal zoning; hydrothermal breccia types; lithocap characteristics; and consequences of telescoping. Field approaches and techniques will be particularly emphasized in an interactive course setting.

The course will look at the important characteristics of the IOCG deposits through examination of several major districts, including the largest examples of this deposit type, Olympic Dam and Salobo, and will discuss both geological and geophysical exploration strategies.

The course will also examine the most important concepts in the exploration for sedimentary rock-hosted copper deposits, using the Central African Copperbelt (200 Mt contained copper) and the Dzhezkazghan area of Kazakhstan as examples to illustrate what produces world-class deposits.

The course is at the intermediate to advanced level. Graduate students and senior undergraduate students are encouraged to attend.

PRESENTERS

Richard H. Sillitoe is a consulting geologist with internationally recognized expertise in the field of copper exploration. After a start with the UK Ministry of Overseas Development, studying supergene enrichment of Cu deposits in Chile, Dr. Sillitoe worked for the Instituto de Investigaciones Geológicas on porphyry copper deposits before becoming an independent consultant in 1971. He is the recipient of awards worldwide. The SEG has named him Thayer Lindsley Lecturer (1988), International Exchange Lecturer (2014), and has honored him with the Waldemar Lindgren Award (1975) and the SEG Silver Medal (2002) for early and mid-career achievements, respectively. He also has served SEG as its President (1999). The 2012 Rio Tinto-sponsored SEG volume on Cu is a tribute to Sillitoe’s work.

Murray W. Hitzman worked in the petroleum and minerals industries from 1976 to 1993, primarily doing mineral exploration worldwide, and was largely responsible for the Lisheen Zn-Pb-Ag deposit discovery in Ireland (1990). Dr. Hitzman served in Washington, D.C. as a policy analyst in both the U.S. Senate (1993–1994) and the White House Office of Science and Technology Policy (1994–1996). Since 1996, he has held the Charles F. Fogarty Chair as Professor in Economic Geology at the Colorado School of Mines. Dr. Hitzman has published extensively on the geology and geochemistry of mineral deposits and on natural resource policy issues and has been conducting research with students in the Central African Copperbelt for the past 15 years.

REGISTRATION

Online at www.segweb.org/events#15PDACSEG1. For SEG members to receive the discounted course registration rate, please download the registration form at www.segweb.org/pdf/events/2015/15PDACSEG-Form.pdf. Your SEG Member ID is required.

Course Fee (including course material, continental breakfast, 3 course lunch, and refreshments):

<table>
<thead>
<tr>
<th>Early Registration (through February 6, 2015)</th>
<th>Late Registration (after February 6, 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDAC or SEG Member: US$699</td>
<td>PDAC or SEG Member: US$899</td>
</tr>
<tr>
<td>Non-member: US$799</td>
<td>Non-member: US$999</td>
</tr>
<tr>
<td>Student Member: US$359</td>
<td>Student Member: US$359</td>
</tr>
</tbody>
</table>

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by February 6, 2015.
SEG at PDAC 2015

Structural Geology of Gold and Copper Deposits, with Emphasis on Ores in Continental Margin Tectonic Settings

Friday & Saturday, February 27–28, 2015 | 8:00 am–5:00 pm

DESCRIPTION

This course addresses the variations in deposit structural styles and controls encountered through tectonic cycles. We will review the tectonic settings, style, structural architecture, and oreshoot controls in different types of Au and Au-Cu deposits in a range of crustal settings, and the magmatic and tectonic processes that contribute to their formation.

Particular emphasis will be on deposits classified as porphyry and IOCG Cu-Au, orogenic Au, epithermal Au, Carlin/Carlin-like, and intrusion-related. The effects of subduction processes and lithostructural setting on deposit localization, syn-mineralization structural controls and kinematics at different crustal levels, and position of deposit formation in deformation sequences will be discussed. Case studies and direct examples of deposits, many in world-class districts, will be reviewed to convey the district-to-stope scale structural controls on mineralization, applicable to exploration targeting at all scales, mine design, resource modeling and ore shoot tracing, and recognition.

The course will be of interest to geologists working in both exploration and mine environments. Graduate students and senior undergraduate students are also encouraged to attend.

PRESENTERS

- **Jeremy P. Richards** is a Professor of Economic Geology at the University of Alberta, and is a registered professional geologist in Alberta. His research interests focus on the genesis of hydrothermal mineral deposits, and in particular, regional tectonic and magmatic controls on porphyry and epithermal mineralization. He is also pursuing research in sustainable development as applied to the minerals industry. He is currently an associate editor of the journal Economic Geology, and was previously editor of the journal Exploration & Mining Geology and associate editor of the Economic Geology 100th Anniversary Volume and Mineralium Deposita.

- **David Rhys** is a consulting geologist based in Vancouver, Canada. He has worked for the last 20 years in the mining industry, applying geological studies with a structural focus to exploration, development, and mining. Mr. Rhys has extensive experience in gold deposits, having worked globally in numerous world-class gold districts of various types for both major and junior companies. His focus is on advanced projects and active mining operations, aiding in the interpretation of mine site ore controls and applications of mine geology to local and district-scale exploration activities. Mr. Rhys also provides training to clients’ geological teams to aid in collecting and interpreting data.

REGISTRATION

Online at [www.segweb.org/events#15PDACSEG2](http://www.segweb.org/events#15PDACSEG2). For SEG members to receive the discounted course registration rate, please download the registration form at [www.segweb.org/pdf/events/2015/15PDACSEG-Form.pdf](http://www.segweb.org/pdf/events/2015/15PDACSEG-Form.pdf). Your SEG Member ID is required.

Course Fee (including course material, continental breakfast, 3 course lunch, and refreshments):

**Early Registration** *(through February 6, 2015)*

- PDAC or SEG Member: US$699
- Non-member: US$799
- Student Member: US$359

**Late Registration** *(after February 6, 2015)*

- PDAC or SEG Member: US$899
- Non-member: US$999
- Student Member: US$359

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by February 6, 2015.
Geology of Granite-Greenstone Terranes and Their Mineral Deposits

GAC/MAC/AGU/CGU Meeting | Montreal (McGill Campus)
May 2–3, 2015

Organizers: Society of Economic Geologists (SEG) and SEG Student Chapters

DESCRIPTION

Granite-greenstone terranes are remnants of once larger tracts of metavolcanic, metaplutonic, and metasedimentary rocks now surrounded and/or intruded by granitoid rocks of similar absolute age. They are important sources of gold, zinc, copper, nickel, and other commodities. The course will provide an overview of geological principles and tools needed to work effectively in this setting, with examples from Precambrian shields and younger accretionary orogens. The recognition, in outcrop and drill core, of volcanic, sedimentary, and plutonic protoliths that have been altered, metamorphosed, and deformed is a recurring practical problem; the application of basic field criteria along with supporting data will be used to establish a framework for mineral exploration. Descriptions of the main types of mineral deposits found in this setting will be augmented by a discussion of exploration guidelines.

The two-day course will consist of eight two-hour modules and is aimed at those who plan to work in such terranes, including young professionals and students, as well as managers who possess some geological background.

PRESENTERS

K. Howard Poulsen specializes in structural aspects of exploration. With more than 40 years experience in research and exploration, Howard has numerous publications in peer-reviewed journals and has consulted for the U.S. Geological Survey, the USSR Institute of Geology and Applied Mineralogy, Shenyang Institute, P.R.C., the BGR (gold deposits in Africa), and UNESCO (the Carpathian arc). His focus is on problems of significance to global mineral exploration. Most recently, Howard has worked for industry on gold deposits in the Canadian Shield, eastern Africa, Western Australia, and in the North American Cordillera, from Honduras to Alaska.

Harold Gibson went from a successful career in the mining exploration sector to teaching at Laurentian University in 1990, where he is Director of the Mineral Exploration Research Centre (MERC) and Professor of Volcanology and Ore Deposits. His research is field based, spans ancient and modern environments, and focuses on VMS ore systems and submarine volcanic processes and deposits. Current research areas include the Paleoproterozoic Flin Flon and Snow Lake VMS districts, northern Manitoba and Saskatchewan, the Archean Noranda VMS district and Abitibi greenstone belt of Ontario and Quebec, VMS deposits of the Guerrero terrain, Mexico, the Lau Basin and Tonga/Aeolian arcs, and the South Indian mid-ocean ridge.

François Robert began working with the Geological Survey of Canada in 1985 as a research scientist with the Mineral Deposits Division, for which he conducted applied research on the geology of gold deposits in Canada and abroad. In 1997, he joined Barrick Gold Corporation, first as Senior Research Geologist, and subsequently in various positions in Australia, South America, and Canada. He is currently VP and Chief Geologist, Global Exploration. In the last 30 years, François has developed extensive expertise on the geology, structure, and setting of gold deposits in granite-greenstone terranes around the world, including Australia, Brazil, Canada, and Tanzania. François is a recipient of the SEG Lindgren Award and the SEG Silver Medal.

REGISTRATION

Online at www.segweb.org/events#15RGACMAC

Early Registration (through April 1, 2015)

Member: US$495
Non-member: US$595
Student: US$150
Student Non-member: US$200

Late Registration (after April 1, 2015)

Member: US$595
Non-member: US$695
Student: US$200
Student Non-member: US$250

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by April 1, 2015. For further information on cancellation policy, event photography, and dietary restrictions, visit www.segweb.org/tc.
XXXIII UNESCO-SEG-SGA
Latin American Metallogeny Course
XXXIII Curso Latinoamericano de Metalogenia
UNESCO-SEG-SGA

Campus of the University of Campinas (UNICAMP)
Campinas (São Paulo state), southern Brazil
Theoretical sessions: July 1–4, 2015
Field trip: July 5–9, 2015

Hydrothermal systems:
A voyage from the source to the ore

COORDINATORS: Roberto Perez Xavier (Campinas)
Fernando Tornos (Madrid)

For additional information, contact:
• Dr. Carolina Moreto  |  cmoreto@ige.unicamp.br
• Gustavo Melo  |  gustavodemelo@ige.unicamp.br
• Professor Dr. Roberto Perez Xavier  |  xavier@ige.unicamp.br

SEG EVENTS  |  segweb.org/events

Workshop on Orogenic Gold
Sunyani, Ghana  |  August 15–16, 2015

DESCRIPTION


August 16: Field trip to the giant Ahafo gold mine site led by geologists from Newmont Mining Corporation

Limited availability
For further details and registration, please contact
George Dogbe (George.Dogbe@newmont.com)

PRESENTER
• Richard J. Goldfarb
Senior research geologist with the U.S. Geological Survey. His major expertise is in the area of the geochemistry and geology of ore deposits, with emphasis on Phanerozoic orogenic gold.
The Geology and Geochemistry of Gold Deposits Workshop
SGA Conference | Nancy, France | 2-day-Pre-Conference Workshop | August 22–23, 2015

DESCRIPTION

This workshop is for geologists from academia and industry who want to improve their understanding about the geology and genesis of gold deposits. The course will provide a comprehensive overview of all aspects of the geology of gold ores in both arc environments and metamorphic terranes. Aspects of the geology, geochemistry, mineralogy, alteration, structure, tectonics, and exploration approaches will be covered for the main gold deposit types of interest to explorationists.

Day 1:
- Gold deposit models
- High and low sulfidation epithermal gold deposits
- Gold-bearing porphyry deposits
- Gold-bearing geothermal systems

Day 2
- Characteristics of orogenic gold
- Orogenic gold in space and time
- Carlin-type gold deposits
- Reduced intrusion-related gold systems

Contact for additional information:
Richard Goldfarb (rgoldfarb@mac.com)

Number of participants: Minimum: 25; Maximum: 60

PRESENTERS

Richard J. Goldfarb
Senior research geologist with the U.S. Geological Survey. His major expertise is in the area of the geochemistry and geology of ore deposits, with emphasis on Phanerozoic orogenic gold.

Stuart F. Simmons
Research Professor at EGI-University of Utah and Consulting Geoscientist at Hot Solutions with more than 30 years of research experience on hydrothermal processes, epithermal mineralization, and geothermal resources.

REGISTRATION

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by July 31, 2015.

Early Registration (through July 31, 2015)
- SGA/SEG (Member): 495 €
- SGA/SEG (Non members): 645 €
- SGA/SEG (Student members): 125 €
- SGA/SEG (Non member students): 200 €

Late Registration (after July 31, 2015)
- SGA/SEG (Member): 595 €
- SGA/SEG (Non members): 745 €
- SGA/SEG (Student members): 200 €
- SGA/SEG (Non member students): 300 €

REGISTER at
sga2015.blog.univ-lorraine.fr/registration/
2015 CONFERENCE SPONSORS

PATRON
bhp billiton

GOLD
NEWCrest Mining Limited
Rio Tinto

SILVER
AngloGold Ashanti
Barrick

BRONZE
Antofagasta Minerals

Dawn Zhou

2015 EVENT SPONSORS

Daily Catering Sponsor
Douglas Haynes Discovery

Industry Dinner
AngloAmerican

Media
Geoscience Society Ausimm
PRE-CONFERENCE COURSES

Carlin-type Gold Deposits: Tectonic Setting, Orebodies, Footprints, Exploration, and Genetic Models

Dates: Saturday-Sunday, September 26–27, 2015
Location: University of Tasmania, Hobart, TAS, Australia
Organizer: Jean Cline
Presenters: Jean Cline, John Muntean

Description

The Carlin-type gold deposits in northeastern Nevada, USA, comprise one of the most productive gold districts in the world, with gold production now ~135 Moz. Mining and research since initial deposit discovery in the 1960s have generated detailed descriptions of deposit geology, including recognition of features that are common to deposits across northern Nevada. Studies over the past 20 years have determined the age of formation of the Nevada district, leading to an understanding of tectonic setting and related structural development and magmatic and hydrothermal activity coincident with deposit formation. In spite of this understanding, no similarly productive trends or districts have been discovered in other parts of the world, and no widely acceptable genetic model has evolved.

This two-day course will begin with an overview of general characteristics that define the type deposits in Nevada and will include a section on the “Carlin-type” deposits in southwestern China. The short course will focus on 1) the geologic evolution of northeastern Nevada that produced an ideal geologic architecture for the deposits, 2) geologic processes in the late Eocene that were critical to deposit formation, and 3) exploration, presented as a systems approach that links processes to targeting criteria at all scales. Course presentations will include detailed descriptions of deposit geology, including structure, lithology, ore-stage and late-ore stage mineralogy, and related hydrothermal alteration minerals and mineral zoning. Samples characteristic of the deposits will be examined, as will polished sections of ore minerals and ore and alteration mineral textures, which define these deposits. Presentations and discussions will provide a framework to interpret observations in the field, along with implications for exploration and research. The course will conclude with a discussion of genetic deposit models, including a model recently published in Nature Geoscience by the presenters who have over 40 years combined experience conducting research on and exploration for Carlin-type gold deposits.

Attendee Maximum: 40

Early Registration:
Members (AUD$795)
Non-members (AUD$895)
Student Members (AUD$395)
Student Non-members (AUD$445)

Late Registration:
Members (AUD$895)
Non-members (AUD$995)
Student Members (AUD$445)
Student Non-members (AUD$495)

Uranium Geology

Dates: Saturday-Sunday, September 26–27, 2015
Location: Wrest Point Hotel, Hobart, TAS, Australia
Organizer: David Thomas
Presenters: David Thomas, Gerard Zaluski, Penny Large, Tom Kotzer, Andrew Fitzpatrick

Description

This two-day course will cover a wide range of topics from a historical overview of uranium exploration and development, through a systematic review of uranium ore deposit systems to the current nuclear industry cycle. The course will provide an introduction to the fundamentals of uranium geochemistry and mineralogy as well as the physics of radioactivity and to its application in exploration and resource evaluation. An important part of the course will be a detailed description of the principal uranium deposit model types; their geological settings, alteration characteristics and mineralization controls as well as descriptions...
Short Courses

of best-in-class examples. The course will also discuss unique mining methods and extractive technologies used to exploit several uranium deposit types.

Attendee Maximum: 40

Early Registration:
Members (AUD$595)
Non-members (AUD$695)
Student Members (AUD$295)
Student Non-members (AUD$345)

Late Registration:
Members (AUD$695)
Non-members (AUD$795)
Student Members (AUD$345)
Student Non-members (AUD$395)

Ore Deposits, Atmosphere Oxygenation and Evolution of Life; How They are Related. New Genetic & Exploration Insights

Dates Saturday-Sunday September 26–27, 2015
Location University of Tasmania Hobart, TAS, Australia
Organizer Ross Large
Presenters Ross Large Kurt Konhauser Peter McGoldrick John Long Valeriy Maslennikov James Farquhar Tim Lyons

Description
This short course will investigate the relationships between ore deposit cycles, ocean chemistry, atmosphere oxygenation cycles and the evolution of life on Earth. Several international specialists will provide a new framework for understanding ocean trace elements and bio-nutrients, ore deposit evolution through time, and how this may inform exploration strategies for gold, copper, zinc, iron, and manganese in sedimentary basins.

Attendee Maximum: 60

Early Registration:
Members (AUD$795)
Non-members (AUD$895)
Student Members (AUD$395)
Student Non-members (AUD$445)

Late Registration:
Members (AUD$895)
Non-members (AUD$995)
Student Members (AUD$445)
Student Non-members (AUD$495)

Understanding Alteration – Use in Exploration and Development

Date Saturday-Sunday September 26–27, 2015
Location University of Tasmania Hobart, TAS, Australia
Organizer John Thompson
Presenters John Thompson Anne Thompson Bruce Gemmell Jim Lang Andrew Davies

Description
The two-day course will provide an overview of alteration mineralogy in relation to ore systems and the use of alteration in exploration. The course will include extensive hands-on sessions with large rock suites and case studies, an introduction to field-portable tools, and reviews of ore deposit-exploration models principally focussed on gold, silver, copper and zinc deposits. The use of alteration mineralogy in assessing potential and developing targets will be emphasized and the potential application of alteration mineralogy to geometallurgy will also be discussed. The course is designed for young professionals, students with some exploration experience, and more senior professionals who are interested in developing new skills and being updated on emerging methods and approaches.

Attendee Maximum: 50

Early Registration:
Members (AUD$895)
Non-members (AUD$995)
Student Members (AUD$445)
Student Non-members (AUD$495)

Late Registration:
Members (AUD$995)
Non-members (AUD$1,095)
Student Members (AUD$495)
Student Non-members (AUD$545)

Skarn Deposits

Date Sunday, September 27, 2015
Location Wrest Point Hotel Hobart, TAS, Australia
Organizer Zhaoshan Chang
Presenters Zhaoshan Chang Larry Meinert

Description
Skarn deposits are some of the largest ore deposits in the world but can be complicated in the field. This one-day short course
is designed to help explorers understand skarn deposits with common sense exploration concepts and easy to apply mineralogical guides. We will clarify the basic concepts and terminology, explain the current understanding of skarn-forming processes, and summarize the general characteristics of major skarn types. The focus will be on the zonation patterns in skarns that are useful in exploration with a discussion of how the zonation pattern varies in different environments. The short course will cover the following topics: 1) Introduction, definition and mineralogy; 2) Classification and terminology; 3) Skarn-forming processes and evolutionary stages; 4) General characteristics of major skarn types (Au, Cu, W, Sn, Pb-Zn, Fe, Mo and others); 5) Zonation in skarn systems; 6) Factors affecting the formation of skarns and zonation patterns; and 7) Skarn exploration techniques.

Attendee Maximum: 40

Early Registration:
- Members (AUD$495)
- Non-members (AUD$595)
- Student Members (AUD$245)
- Student Non-members (AUD$295)

Late Registration:
- Members (AUD$595)
- Non-members (AUD$695)
- Student Members (AUD$295)
- Student Non-members (AUD$345)

Description
This course is designed for those interested in learning how to create geometallurgical domains within an orebody and is intended to provide sufficient practical experience to allow participants to begin applying the techniques in their work place. The focus will be on the use of tools to create domains for throughput and/or recovery. A range of (new) tools and methodologies are now available that allow sufficient density of data to be collected in a timely and cost effective manner to permit domain definition relatively easily and inexpensively. Once defined, domains can be included in geometallurgical models of ore deposits where they can be applied to mine planning and optimization.
high-flux flow, and identifying the stress regime prevailing during mineralization. Particular attention is paid to the interpretation of small-scale structures as a guide to what is happening on a larger scale.

Attendee Maximum: 40

Early Registration:
- Members (AUD$795)
- Non-members (AUD$895)
- Student Members (AUD$395)
- Student Non-members (AUD$445)

Late Registration:
- Members (AUD$895)
- Non-members (AUD$995)
- Student Members (AUD$445)
- Student Non-members (AUD$495)

Aeromagnetic Interpretation

Date
Thursday-Friday
October 1-2, 2015

Location
West Point Hotel
Hobart, TAS, Australia

Organizer
Kim Cook

Presenter
Kim Cook

Description
Discovery and delineation of new ore deposits is becoming increasingly difficult with opportunity for outcropping mineralization in both mature and emerging terranes decreasing rapidly. The ability to create high quality geological and structural representations in areas of limited outcrop using remotely sensed data is paramount for regional target generation, ground selection, and also for more discrete mapping and targeting at a prospect scale. Interpretation of aeromagnetic data to produce solid geology and structural maps is not an exact science, however, a systematic approach using enhanced processing and imagery that incorporates all existing outcrop or other geological inputs can result in a high quality map. This Interpretation short course introduces the participant to magnetic, gravity, and radiometric theory, with a focus on issues that affect the interpretability of the data, such as:

- How the Total Magnetic Field changes with respect to location in the world.
- Data processing techniques - what types of filters bring out certain aspects of the data, and how to choose the best filters for interpretation purposes.
- How to determine ‘real’ vs ‘processing issues’. What to look out for and what to accept/not accept from a contactor.
- Basic ore deposit models and how they manifest themselves in geophysical datasets – using real-life examples.

The short course takes a “hands-on” approach, which at the end of 2 days will see each participant producing at least one detailed solid geology map, targets, and possibly cross sections. Participants may bring their own data to interpret.

Attendee Maximum: 30

Early Registration:
- Members (AUD$795)
- Non-members (AUD$895)
- Student Members (AUD$395)
- Student Non-members (AUD$445)

Late Registration:
- Members (AUD$895)
- Non-members (AUD$995)
- Student Members (AUD$445)
- Student Non-members (AUD$495)

Exploratory Data Analysis with Open Source Tools

Date
Thursday, October 1, 2015

Location
West Point Hotel
Hobart, TAS, Australia

Organizer
Brian Krzys

Presenter
Brian Krzys

Description
Free and Open Source Software (FOSS), or just Open Source, is an idea that seems like it shouldn’t work yet it drives some of the largest organizations in the world and is strongly supported by a passionate, well-organized community. Beyond software the ideas behind Open Source are contributing to a wide spectrum of projects ranging from Wikipedia to Open Source Governance. This course will provide an introduction to the varied Open Source toolset applicable to the minerals industry via a series of practical exercises in Exploratory Data Analysis (EDA). The exercises will be hands-on and participants are encouraged to bring their own dataset to work with or use freely available data that will be distributed as part of the course.

Attendee Maximum: 40

Early Registration:
- Members (AUD$495)
- Non-members (AUD$595)
- Student Members (AUD$245)
- Student Non-members (AUD$295)

Late Registration:
- Members (AUD$595)
- Non-members (AUD$695)
- Student Members (AUD$295)
- Student Non-members (AUD$345)
PRE-CONFERENCE FIELD TRIPS

**FT01**

**Deposits of the Gold-Rich Ordovician Alkalic Porphyry and Epithermal Province, Macquarie Arc, New South Wales**

Post-Conference Field Trip departure and return site: Orange, NSW, Australia

Dates: September 23–25, 2015

**Field Trip Leaders**

- Anthony Harris, Principal Geologist (Exploration) Newcrest Mining Limited
- Nathan Fox, ARC Centre for Excellence in Ore Deposits (CODES), University of Tasmania

**Description**

The Macquarie Arc is richly endowed in world-class porphyry copper-gold mineralization and related deposit styles. In this field trip, key examples of these occurrences will be examined, including Cadia, and several other key systems. The special tectonic framework that gave rise to these very gold rich systems will be a focus of the trip, including the evolution and accretion of the arc during ~50 million years of subduction-related development along the boundary between east Gondwana and the paleo-Pacific plate.

**Attendee Maximum:** 20

**Early Registration:**
- Members (AUD$995)
- Non-members (AUD$1,095)
- Student Members (AUD$495)
- Student Non-members (AUD$545)

**Late Registration:**
- Members (AUD$1,095)
- Non-members (AUD$1,195)
- Student Members (AUD$545)
- Student Non-members (AUD$595)

**FT02**

**Archean World-Class Gold and Nickel Camps from the Kalgoorlie Terrane (Yilgarn Craton, Western Australia)**

Pre-Conference Field Trip departing from and ending in Kalgoorlie, Western Australia.

September 22–25, 2015

**Field Trip Leaders**

- Cam McCuaig, Director, Centre for Exploration Targeting, ARC Centre of Excellence for Core to Crust Fluid Systems, University of Western Australia, Perth, Western Australia
- Marco Fiorentini, Center for Exploration Targeting and ARC Centre of Excellence for Core to Crust Fluid Systems, University of Western Australia, Perth, Western Australia
- Nicolas Thebaud, Center for Exploration Targeting and ARC Centre of Excellence for Core to Crust Fluid Systems, University of Western Australia, Perth, Western Australia

**Description**

This excursion, based out of Kalgoorlie, will examine the structural and stratigraphic setting of a world-class orogenic gold and komatiite-hosted nickel camp in Western Australia. Visit key regional outcrops and deposits and get an insight into the deposit, camp, and regional architecture of a major Australian mineralized district discovered about 120 years ago and still producing today. Mines to be visited include the St Ives gold mine, a komatiite-hosted deposit in the Kambalda-Widgiemooltha area, as well as the Kalgoorlie Super Pit, the largest open pit gold mine in Australia with a global endowment that exceeds 70 Moz of gold.

**Attendee Maximum:** 18

**Early Registration:**
- Members (AUD$1,995)
- Non-members (AUD$2,095)
- Student Members (AUD$995)
- Student Non-members (AUD$1,045)

**Late Registration:**
- Members (AUD$2,095)
- Non-members (AUD$2,195)
- Student Members (AUD$1,045)
- Student Non-members (AUD$1,095)

**FT03**

**VHMS and Granite Related Ore Deposits of Western Tasmania**

Pre-Conference Field Trip starting from and returning to the Wrest Point Hotel, Hobart, Tasmania.

September 22–27, 2015

**Field Trip Leaders**

- Andrew McNeill, Manager Geoscience, Mineral Resources Tasmania, Tasmania, Australia
- Bruce Gemmell, Director of the ARC Centre of Excellence in Ore Deposits (CODES), University of Tasmania, Australia
- Ralph Bottrill, Senior Mineralogist, Mineral Resources Tasmania

**Description**

Western Tasmania has undergone three major metallogenic episodes that have...
resulted in the occurrence of many significant base metal and tin deposits within a small (~250-km-long) region. The major geologic feature that hosts the copper, gold, and base metal deposits is the Cambrian submarine Mt Read Volcanic belt, whereas the tin deposits mainly formed where a Devonian granite belt intruded basement carbonate sequences, producing proximal and distal skarns. The field trip to this area will provide the opportunity to visit several of the well studied Cambrian VHMS and Devonian granite-related deposits (including the Mt Lyell Cu-Au field, Renison (Sn), Rosebery-Hercules (Pb-Zn) and Henty (Au)) as well as some of the less well known deposits (Avebury (Ni), Kara (Fe-W) of the district.

Attendee Maximum: 18

Early Registration:
- Members (AUD$1,195)
- Non-members (AUD$1,295)
- Student Members (AUD$595)
- Student Non-members (AUD$645)

Late Registration:
- Members (AUD$1,295)
- Non-members (AUD$1,395)
- Student Members (AUD$645)
- Student Non-members (AUD$695)

POST-CONFERENCE FIELD TRIPS

FT04 Introduction to the Olympic Dam Supergiant Iron Oxide Copper-Gold Deposit, South Australia

Post-Conference Field Trip departing from and returning to Adelaide, SA, Australia.

October 1–3, 2015

Field Trip Leader
- Kathy Ehrig, Principal Geometallurgist, BHP Billiton–Olympic Dam Resource Planning and Development

Description

The Mesoproterozoic Olympic Dam deposit is Earth’s largest known iron oxide copper-gold deposit. This trip will visit the Olympic Dam surface geological operations, and through a combination of lectures and inspections of the vast on-site core library, the current understanding of the geology and genesis of the deposit will be discussed. Major features to examine will be the different types of breccia and hydrothermal features, the recent recognition of larger proportions of altered mafic intrusive rocks in the breccias, and the nature of clastic sediment domains. Participants will also have an opportunity to examine details of other prospects in the area, including Wirrda Well and Acropolis. All trip participants will be guests of BHP-Billiton and will need to abide by the occupational health and safety requirements of the operation while on site.

Attendee Maximum: 30

Early Registration:
- Members (AUD$895)
- Non-members (AUD$995)
- Student Members (AUD$495)
- Student Non-members (AUD$545)

Late Registration:
- Members (AUD$995)
- Non-members (AUD$1,095)
- Student Members (AUD$495)
- Student Non-members (AUD$545)

FT05 Porphyry and Epithermal Systems of the Sunda Banda Arc, Indonesia

Post-Conference Field Trip departing from and returning to Bali, Indonesia; some domestic flights must also be organized by the participants.

October 1–8, 2015

Field Trip Leaders
- David Cooke, CODES, University of Tasmania, Australia
- Adi Maryono, Vice President PT J Resources, South East Asia
- Iryanto Rompo, Exploration Manager, Buena Group Indonesia

Description

This field trip will introduce participants to the geology and mineralization that characterizes the Sunda-Banda arc. It will include site visits to giant porphyry Cu-Au deposits (Batu Hijau, Tumpangpitu), modern hydrothermal systems on an active volcano

Attendee Maximum: 30

Early Registration:
- Members (AUD$895)
- Non-members (AUD$995)
- Student Members (AUD$495)
- Student Non-members (AUD$545)

Late Registration:
- Members (AUD$995)
- Non-members (AUD$1,095)
- Student Members (AUD$495)
- Student Non-members (AUD$545)
Field Trips

(Mt Ijen), and exploration projects on Lombok and Sumbawa. In addition to site visits, participants will have the opportunity to spend one day learning and applying the Anaconda mapping method inside the Batu Hijau open pit.

Attendee Maximum: 17

Early Registration:
- Members (AUD$1,895)
- Non-members (AUD$1,995)
- Student Members (AUD$995)
- Student Non-members (AUD$1,045)

Late Registration:
- Members (AUD$1,995)
- Non-members (AUD$2,095)
- Student Members (AUD$1,045)
- Student Non-members (AUD$1,095)

Active and Extinct Epithermal Environments of the North Island, New Zealand

Post-Conference Field trip starts and ends in Auckland, New Zealand.

October 2–7, 2015

Field Trip Leaders
- Stuart F. Simmons, Hot Solutions Ltd, Auckland, New Zealand
- Tony Christie, GNS Science, Lower Hutt, New Zealand

Description
This excursion provides an overview of the volcanic-tectonic setting, hydrology, fluid chemistry, alteration, and mineralization of sub-aerial hydrothermal systems and their epithermal ore-forming environments. Unique is the opportunity to observe precious-metal transport and deposition in the Champagne Pool, and to see the interplay of magmatic and hydrothermal processes. The itinerary includes visits to hot spring areas and steamfields in the Taupo Volcanic Zone, Tongariro National Park, and epithermal Au-Ag deposits in the Coromandel peninsula.

The first two days include stops at the Karangahake gorge and Waihi in the Coromandel goldfields to view the world-class Martha Hill deposit and to gain a 3-D understanding of mineralization and alteration. The next two days are based out of Rotorua, with visits to the Orakeikorako, Waimangu, and Waiotapu thermal areas, the Broadlands-Ohaaki and Wairakei steam-fields, and the Ohakuri epithermal Au-Ag prospect. The last two days focus on the geology and hydrothermal activity of Taupo and Tongariro volcanic centers, providing spectacular views of a large rhyolitic caldera and tall andesitic stratacones.

Attendee Maximum: 35

Early Registration:
- Members (AUD$2,295)
- Non-members (AUD$2,395)
- Student Members (N/A)
- Student Non-members (N/A)

Late Registration:
- Members (AUD$2,395)
- Non-members (AUD$2,495)
- Student Members (N/A)
- Student Non-members (N/A)

Organizing Committee Members

Conference Chair:
Bruce Gemmell
CODES, University of Tasmania
bruce.gemmell@utas.edu.au

Society of Economic Geologists:
Brian Hoal
Executive Director
brianhoal@segweb.org

Technical Program Chair:
Noel White
Consultant
noelcwhite@hotmail.com

Posters/Students:
Patrick Sack
Yukon Geological Survey
patrick.sack@gov.yk.ca

Short Courses:
Zhaoshan Chang
James Cook University
zhaoshan.chang@jcu.edu.au

Field Trips:
Garry Davidson
CODES, University of Tasmania
garry.davidson@utas.edu.au

Sponsorship/Marketing:
Dan Wood
Consultant
danwood3844@hotmail.com

Secretary/Students:
Christine Horrigan
Society of Economic Geologists
christinehorrigan@segweb.org

Conference Secretariat:
Carol van ‘t Veld
Conference Design
mail@conferencedesign.com.au

SEG 2015 Registration Fees

<table>
<thead>
<tr>
<th>Registration is open!</th>
<th>All registration fees are in Australian dollars (AUD).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early Registration — April 1–July 31, 2015</strong></td>
<td><strong>Late Registration (includes on-site) — from August 1, 2015</strong></td>
</tr>
<tr>
<td>Member - AUD$795</td>
<td>Member - AUD$895</td>
</tr>
<tr>
<td>Non-member - AUD$895</td>
<td>Non-member - AUD$995</td>
</tr>
<tr>
<td>Student Member - AUD$295</td>
<td>Student Member - AUD$345</td>
</tr>
<tr>
<td>Student Non-member - AUD$345</td>
<td>Student Non-member - AUD$395</td>
</tr>
</tbody>
</table>

SEG reserves the right to cancel short course or field trip events should minimum attendance numbers not be met by July 31, 2015.
Senior Exploration Management Course

SEG Course Center | Littleton, CO, USA
December 1-4, 2015, 8:30am – 5pm

Organizer: Society of Economic Geologists (SEG)
Presenter: Western Mining Services (WMS)

SCOPE

This four-day training course concerns the principles and practices of effective exploration management. The curriculum covers the spectrum of technical and business issues that senior exploration managers typically confront.

- Mineral exploration at the strategic scale – the roles of greenfields and brownfields exploration in development and implementation of corporate growth strategies
- The design and management of exploration programs and portfolios
- The importance of group structure, program design, process discipline, and effective people management in achieving exploration group objectives
- Opportunity generation including the exploration search space concept, targeting science and the application of targeting models
- How to negotiate land and minerals access deals, identify and manage nontechnical project risks, engage in early stage evaluation of project economics, and maintain the important social license to operate exploration projects in varied risk environments

The course format utilizes lecture and workshop and stresses interactive thinking and problem solving. Participants work in teams to design solutions for exploration management challenges and present their results to the larger group.

WHO SHOULD ATTEND?

This course is ideal for regional and country exploration managers, for senior project managers who are on track to move into positions of senior responsibility, and for geoscientists who aspire to senior exploration management roles. The course is also recommended for commercial managers who participate in mineral exploration programs as well as government and academic professionals who interact with the mineral exploration industry.

This SEG-sponsored course in December 2015 will be the tenth course presentation, and that is in addition to numerous in-house courses presented by WMS based on the general course curriculum but tailored to the needs of the individual company.
Senior Exploration Management Course
SEG Course Center | Littleton, CO, USA | December 1-4, 2015

FACULTY

- **Jon Hronsky (BAppSci, Ph.D., MAIG, FSEG)**
  With more than 30 years of experience in mineral exploration, Jon has worked across a diverse range of commodities, including discovery of the West Musgrave nickel sulfide province in Western Australia. Prior to joining Western Mining Services (WMS), he served as manager of strategy & generative services for BHP Billiton Mineral Exploration and as global geoscience leader for WMC Resources Ltd. He is chairman of the board of the Center for Exploration Targeting in WA.

- **Bart Suchomel (BA, M.Sc., RPG, FAusIMM, FSEG)**
  Prior to co-founding WMS in 2005, Bart was general manager-exploration for WMC Resources Ltd. With WMC, he led teams that discovered gold deposits in Chile and Brazil. Currently, Bart has had a key role, with Brad Margeson and Steven Bussey, in discovering the world-class Media Luna skarn-hosted Au-Ag-Cu deposit in Mexico. Bart provides assistance to mining and exploration companies in the areas of exploration strategy, planning, and portfolio management, as well as in targeting and project due diligence.

- **Brad Margeson (BA, M.Sc., SME, FSEG)**
  Brad held several senior management roles for WMC Resources Ltd. prior to co-founding WMS in 2005. At WMC, he was global manager of exploration projects, leading teams that discovered gold deposits in Canada. With 35 years experience in the industry, Brad’s current focus is on exploration strategy and planning, new greenfield and brownfield exploration targeting, and due diligence.

- **Steven Bussey (BA, M.Sc, PhD)**
  Before joining WMS as a partner in 2007, Steve worked in a number of senior exploration roles, including principal geoscientist for WMC Resources Ltd. At WMS, Steve’s focus is on framework studies, mineral exploration targeting, and project due diligence. He has more than 35 years experience in mineral exploration.

- **Jeff Welborn (BA, JD)**
  Jeff has more than 40 years experience as a private oil & gas and mining mineral lawyer, in corporate senior management roles in WMC Resources Ltd, and as a co-founder and partner at WMS. Jeff’s experience covers a broad range of commercial, legal, and risk management matters. He assists WMS clients globally with commercial strategy development, program design and planning, deal analysis and negotiation, and issues that involve minerals and land access.

Registration (opens August 1, 2015 - early deadline: November 1, 2015)
Register online: segweb.org/events#15RWMSSEM

| Member (Early / Late) – US$3,200 / US$3,400 | Non-member (Early / Late) – US$3,500 / US$3,700 |

CURRICULUM

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Exploration Principles, Philosophies and Culture</td>
<td>Minerals Access and Deal Making</td>
<td>Group Discussion</td>
<td>Commercial Risk Management Exercise Presentations</td>
</tr>
<tr>
<td>People in Mineral Exploration</td>
<td>Mineral Exploration Targeting</td>
<td>Mineral Exploration Tactics</td>
<td>Feedback, Awards, and Group Discussion</td>
</tr>
<tr>
<td>Introduction of Exploration Strategy Exercise</td>
<td>Introduction of Commercial Risk Management Exercise</td>
<td>Group Exercise</td>
<td>Wrap-up</td>
</tr>
</tbody>
</table>

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by November 15, 2015.
For further information on cancellation policy, event photography, and dietary restrictions, visit www.segweb.org/tc.