

MASTER OF ECONOMIC GEOLOGY UNIT

via online delivery

Fundamentals of Economic Geology

Week 1: 17—22 April, 2023

Week 2: 8—12 May, 2023

Online content will be delivered via Zoom between 9am and 6pm AEST (UTC+10)



CODES, Centre for Ore Deposit and Earth Sciences, University of Tasmania

CRICOS Provider Code 00586B

CODES' Master of Economic Geology unit on the Fundamentals of Economic Geology, will be presented by CODES staff together with several globally renowned invited experts. This unit teaches the fundamental skills needed by all economic geologists in order to characterise, interpret, explore and mine ore deposits. Key fundamental geological concepts used to describe and interpret ore deposits will be covered, including ore and alteration mineralogy, paragenesis, ore and gangue textures, breccia textures, geochemistry and geophysical characteristics of ore-forming environments and supergene features. The unit focusses on identifying and using key tools to recognise the sequence of events that have impacted ore-forming environments, and how these tools can be best used in an exploration context to solve exploration, mineral processing and environmental problems. Practical exercises will be a major component of the unit, and will be used to reinforce and enhance content delivered in a series of online lectures.

The first week provides an introduction to ore deposits, the minerals that occur within them, and key textures that help us to interpret ore genesis and that can aid exploration. You will learn how to construct mineral paragenesis for a variety of deposit types and become familiar with the tools used to identify and map alteration mineralogy and zonation patterns. Geochemical sampling and data analysis will also be reviewed. Week 2 covers metal zoning in hydrothermal ore deposits, describing and interpreting ore-related breccias, supergene processes and geochemical exploration in the regolith, geophysical properties of ore deposits and the economics of Economic Geology.

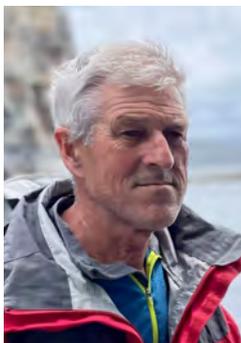
PRESENTERS

INVITED SPEAKERS

Tim Callaghan is a consultant specialising in resource estimation, feasibility studies, near mine exploration and project reviews. He has over 30 years experience in the mining industry in both production and exploration roles, involving a diverse range of target commodities. Tim has overseen the management of mineral production and exploration teams on surface and underground mine sites and remote exploration camps within Australia and Latin America.



Scott Halley is an independent consultant specializing in exploration geochemistry, and the application of multi-element ICP geochemistry and SWIR analysis to mapping alteration mineral zonation patterns around hydrothermal systems. Over the past 10 years, he has consulted to more than 130 mining and exploration companies in more than 25 countries.



Cassady L. Harraden currently works as a postdoctoral research fellow with the Mineral Deposit Research Unit at the University of British Columbia in Vancouver, BC. Her research is focused on porphyry fertility and vectoring in BC with a specific focus on mineralogy and mineral chemistry from LIBS data. She previously worked with Corescan on the spectral interpretation of hyperspectral data as well as developing new geometallurgical and geotechnical applications of data collected using Corescan's automated core logging technology. She completed her PhD in geometallurgy with the CODES group at the University of Tasmania in Australia. Before completing her PhD she worked as an exploration geologist in Alaska, Colorado, Nevada, Utah, and Arizona.



Larry Meinert is a Research Affiliate at the Colorado School of Mines and Editor of Economic Geology. Previously he was Deputy Associate Director for Energy & Mineral Resources at the U.S. Geological Survey and professor of Economic Geology at Smith College and Washington State University where he managed research laboratories and advised dozens of postdoctoral scientists and Ph.D., M.Sc., and B.S. students. He has worked as a consultant for major mining companies and wineries in more than 50 countries. He earned a Ph.D. degree in geology from Stanford University and B.A. from Carleton College. In his spare time, he runs marathons and operates a small home winery specializing in a barrel-fermented Bordeaux-style blend of Cabernet Sauvignon, Carmenere, and Malbec.



Noel White holds adjunct appointments at various institutions including CODES, the University of Queensland, James Cook University, China University of Geosciences Beijing, and Fuzhou University. He is also Distinguished Professor of Economic Geology, and Director of the Ore Deposits and Exploration Centre at Hefei University of Technology, China. Noel's career included 35 years with BHP Minerals Exploration. He has also consulted internationally on mineral exploration, working on diverse commodities, and been recognised with the China Friendship Award, and the R.A.F. Penrose Gold Medal of the Society of Economic Geologists.



CODES PRESENTERS

Mike Baker, Senior Research Fellow

David Cooke, Director of CODES

Angela Escolme, Lecturer

Michael Roach, Senior Lecturer

Robert Scott, Senior Lecturer and Masters Co-ordinator

Francisco Testa, Postdoctoral Research Fellow

Lejun Zhang, Senior Research Fellow

CSL (Central Science Laboratory) PRESENTER

Karsten Goemann, Senior Research Fellow



Fundamentals of Economic Geology
is offered as a unit in the national Minerals Geoscience Masters program.

MASTER OF ECONOMIC GEOLOGY

THE MOST COMPREHENSIVE MASTER DEGREE IN MINERAL EXPLORATION AND MINING GEOLOGY ANYWHERE IN THE WORLD

This course work-based Masters program is aimed at geoscientists who want to gain a thorough up-date on advances across the spectrum of economic geology applied to mineral exploration. The Master of Economic Geology at UTAS is part of the national Minerals Geoscience Masters program, jointly offered by the University of Tasmania and the University of Western Australia, in conjunction with Curtin Business School at Curtin University.

Course structure

The Masters course can be completed in either of two ways:

Option 1 (research pathway): requires the completion of six coursework units (worth 75% of total credit points) and a minor research thesis (worth 25%). Five of the units must be completed at CODES including thesis units KEA724 and KEA725, core units KEA712, KEA716 and at least one field-based unit, while the remainder may be completed at other participating universities. Duration: 18–24 months full-time; up to 36 months part-time (flexible in recognition of industry participants).

Option 2 (professional pathway): requires the completion of eight units of coursework, at least five of which must be undertaken at CODES including core units KEA712, KEA716 and

at least one field-based unit. Duration: up to 36 months part-time (but flexible in recognition of constraints on industry participants).

Participating universities offer up to seven units annually or in rotation over a two-year period. Most units are of two weeks duration.

Fees

UTAS tuition fees are approximately \$2,075 per unit (8 in total) for domestic students (2023 rate for Commonwealth Supported Places) and \$9,238 (AUD) per unit for full-fee paying overseas students (FFPOS) (2023 rate). Field-based units have additional costs. Costs will vary for units taught by other MGM partner institutions.

Entry Requirements

BSc (Hons), or a BSc (majoring in geoscience) with at least two years industry experience. International students should also refer to <http://www.international.utas.edu.au>. English language proficiency requirements also apply.

Masters units offered by CODES

- 5 – 18 February 2023:
KEA718 Advanced Field Skills in Economic Geology ^
- 12 – 24 March 2023:
KEA707 Ores in Magmatic Arcs (Indonesia) ^
- 17 – 22 April & 8 – 12 May 2023:
KEA716 Fundamentals of Economic Geology *
- 29 May – 3 June & 3 – 7 July 2023:
KEA709 Ore Deposit Geochemistry, Hydrology and Geochronology #
- 7 August – 15 October 2023 (Intensive Part 2: 18 – 22 September):
KEA713 Geodata Analytics *
- 16 – 27 October 2023:
KEA711 Geometallurgy ^
- November 2023:
KEA707 Ores in Magmatic Arcs (South America) ^
- February 2024:
KEA718 Advanced Field Skills in Economic Geology ^
- March 2024:
KEA708 Volcanology and Mineralisation in Volcanic Terrains (New Zealand, western Tasmania) ^
- April – May 2024:
KEA716 Fundamentals of Economic Geology *
- June – July 2024:
KEA712 Ore Deposit Models and Exploration Strategies #
- October – November 2024:
KEA710 Exploration in Brownfield Terrains *

NB COVID-19 travel restrictions may impact the running of units with face to face delivery

* online delivery

blended delivery (week 1 face to face/online; week 2 online)

^ face to face delivery

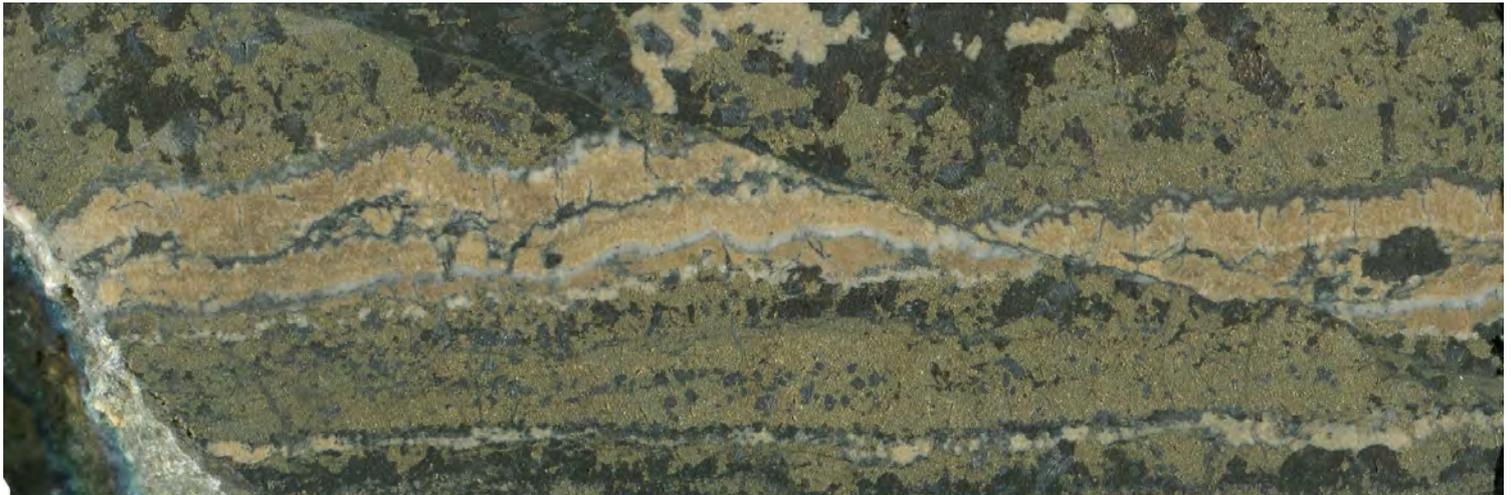
For further information contact:

Dr Robert Scott
Masters Coordinator, CODES
Private Bag 79, Hobart 7001, Australia
Tel: +61 3 6226 2786
Email: CODES.Info@utas.edu.au
Robert.Scott@utas.edu.au
Web: utas.edu.au/codes/masters-short-courses

PROVISIONAL PROGRAM

WEEK 1: April 17—22

Monday April 17	Introduction to ore deposits; using minerals in exploration	PRESENTERS: David Cooke, Noel White
Tuesday April 18	Introduction to ore deposits; common textures in ore deposits	PRESENTERS: David Cooke, Robert Scott, Noel White
Wednesday April 19	Paragenesis	PRESENTERS: David Cooke, Robert Scott
Thursday April 20	Alteration	PRESENTERS: Cassidy Harraden, Francisco Testa, Lejun Zhang
Friday April 21	Geochemical data acquisition, processing and interpretation	PRESENTERS: Tim Callaghan, Karsten Goemann, Francisco Testa, Noel White, Lejun Zhang
Saturday April 22	Introduction to the Grassy W skarn assignment	PRESENTERS: Larry Meinert, Michael Roach, Lejun Zhang



WEEK 2: May 8—12

Monday May 8	Metal zoning	PRESENTERS: Mike Baker, Scott Halley, Francisco Testa, Lejun Zhang
Tuesday May 9	Geophysical properties of ore deposits	PRESENTER: Michael Roach
Wednesday May 10	Breccias	PRESENTER: Francisco Testa
Thursday May 11	Weathering environments, element mobility and supergene ores	PRESENTERS: Angela Escolme, Scott Halley, Noel White
Friday May 12	The economics of economic geology / Grassy W assignment	PRESENTER: Noel White

REGISTRATION FORM

Fundamentals of Economic Geology

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Please complete and return to:

CODES

University of Tasmania, Private Bag 79

Hobart, Tasmania, Australia 7001

Ph: +61 3 6226 2472

Email: CODES.Info@utas.edu.au

PERSONAL DETAILS

Title—Please highlight (Prof / Dr / Mr / Mrs / Ms / Miss)

First Name: Last Name: (surname / family name):

Preferred Name:

Position:

Company / University:.....

Address:

City: State: Postcode: Country:

Email: Phone (mobile / cell):

Dial-in Location (ie City):Dial-in Timezone (e.g. UTC +10):

REGISTRATION FEES

All fees are in Australian dollars (AUD) and include GST. Fees do not include tuition costs for enrolled students.

Please indicate

Minerals Geoscience Masters Program (MGM) Students:

- Full unit (free) - University of Tasmania enrolled
- Full unit (free) - University of Western Australia enrolled

Industry Participants:

- Full training unit (\$3,300)
- ___ days at \$550/day (maximum charge 6 days, indicate days below)

CODES Staff/Students:

- Unit classes (free, indicate days below)

Other Full-time Students:

- A limited number of discount places may be available for full-time students from other institutions. Please contact CODES.Info@utas.edu.au to inquire about availability, together with proof of current full-time enrolment at your home institution.

PLEASE NOTE: Participants *NOT* attending entire training unit, please circle selected days

Week 1: 17 18 19 20 21 22 April

Week 2: 8 9 10 11 12 May

Please retain a copy of this form for your records and email to CODES.Info@utas.edu.au.

PAYMENT

Registrations are due by 3rd of April, 2023. Full payment must be received by 10th of April, 2023.

Preferred payment method. Please indicate

Credit Card

Upon receipt of your registration form and confirmation of your place, you will be provided with a payment reference number and web address for online payments. Please note: Credit card details *cannot* be accepted by email.

Invoice (payment can be made by credit card or bank transfer)

Invoice to (name/company):

Attention to (optional):

Reference (e.g. order number (optional)):

Address:

Email address:

**MGM STUDENTS: THIS FORM DOES NOT CONSTITUTE
AN OFFICIAL UNIVERSITY ENROLMENT—YOU MUST
ALSO ENROL VIA ESTUDENT BY THE INTERNAL
DEADLINE (this may differ from the date above)**