

MASTER OF ECONOMIC GEOLOGY SHORT COURSE

via online delivery

Fundamentals of Economic Geology

Week 1: 30 August—4 September, 2021

Week 2: 27 September—1 October, 2021

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 short course on the Fundamentals of Economic Geology, will be presented by CODES staff together with several globally renowned invited experts. This short course teaches the fundamental skills needed by all economic geologists in order to characterize, 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 short course will include a panel discussion on the economics of Economic Geology. The short course 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 course, and will be used to reinforce and enhance content delivered in a series of on-line 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.

SHORT COURSE PRESENTERS

INVITED SPEAKERS

Rodney Allen is a consultant and CEO, Volcanic Resources, with over 40 years experience in mineral exploration and research applied to mineral exploration. He is best known for his skills in interpreting volcanic successions, hydrothermal alteration, and the ore deposits that occur in them.

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.

David Green is a senior geologist at Mineral Resources Tasmania with over 20 year's experience. David works closely with hyperspectral mineralogy datasets produced by the HyLogger™ to characterise ore bodies for a range of geological and metallurgical outcomes. David has additional expertise in geoinformatics (GIS), geochemistry and structural geology.

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 is a Senior Spectral Geologist, Geometallurgy Specialist currently working with Corescan focused on developing new geometallurgical and geotechnical applications using data collected from hyperspectral imaging technology. This was also

the focus of her PhD research at CODES at the University of Tasmania. Before completing her PhD she worked as an exploration geologist in Alaska, Colorado, Nevada, Utah, and Arizona.

David Huston is a Principal Research Scientist at Geoscience Australia, where he researches a range of ore deposit types around Australia. His particular interests include regional metallogenesis and its links to the evolution of the Earth, both in Australia and around the world. Recently he has been documenting the temporal distribution of mineral deposits related to convergent margins, and using the results to infer how the tectonics of these margins have change through time. He has also been using diverse datasets (e.g. isotopic, MT, gravity and passive seismic) to identify crustal edges that are major controls on the distribution of deposits on convergent margins.

Glen Masterman is VP Discovery and Business Development at Evolution Mining. He has over 20 years experience in minerals exploration, resource development, business development and operations leadership.

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.

Rick Valenta is the Director of the W.H. Bryan Mining & Geology Research Centre Program Leader (Complex Orebodies) at the Sustainable Minerals Institute, and Acting Director of the Julius Kruttschnitt Mineral Research Centre at the University of Queensland. Rick's areas of focus include structural geology, geophysics and ore deposit geology, with an overall theme of better understanding the underlying processes which lead to the localisation and characteristics of these deposits. Rick also has a strong focus on development of 4D mineral systems models from deposit to region scales, using these models to improve targeting techniques, better formulate geological and resource models, and inform prediction of mineral processing performance.

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

David Cooke, Director of CODES

Angela Escolme, Lecturer

Robert Scott, Senior Lecturer and Masters Co-ordinator

Michael Roach, Senior Lecturer

Francisco Testa, Postdoctoral Research Fellow

Lejun Zhang, 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: requires the completion of six coursework units and a minor research thesis. Four of the units must be completed at CODES, while the remainder may be completed at other participating universities. Duration: 18–24 months full-time; up to 30 months part-time (flexible in recognition of industry participants).

Option 2: requires the completion of eight units of coursework, at least four of which must be undertaken at CODES. Duration: up to 30 months part-time (flexible in recognition of industry participants).

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

Fees

UTAS tuition fees are approximately \$1,987 per unit (8 in total) for domestic students (2021 rate for Commonwealth Supported Places) and \$8,636 (AUD) per unit for full-fee paying overseas students (FFPOS) (2021 rate). Field-based courses 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

- 30 August – 4 September & 27 September – 1 October 2021:
KEA716 Fundamentals of Economic Geology
- 18–29 October 2021:
KEA711 Geometallurgy
- 21 November – 3 December 2021:
KEA707 Ores in Magmatic Arcs (Tas & NSW) ^
- January—February 2022:
KEA716 Fundamentals of Economic Geology
- February 2022:
KEA718 Advanced Field Skills in Economic Geology ^
- June—July 2022:
KEA712 Ore Deposit Models and Exploration Strategies
- October 2022:
KEA710 Exploration in Brownfield Terrains
- September—November 2022:
KEA713 Geodata Analytics
- November 2022:
KEA708 Volcanology and Mineralisation in Volcanic ^
Terrains (New Zealand, western Tasmania)
- January—February 2023:
KEA716 Fundamentals of Economic Geology
- February 2023:
KEA718 Advanced Field Skills in Economic Geology ^
- June 2023:
KEA709 Ore Deposit Geochemistry, Hydrology and
Geochronology

^ COVID-19 travel restrictions may impact the running of this unit

For further coursework Masters 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

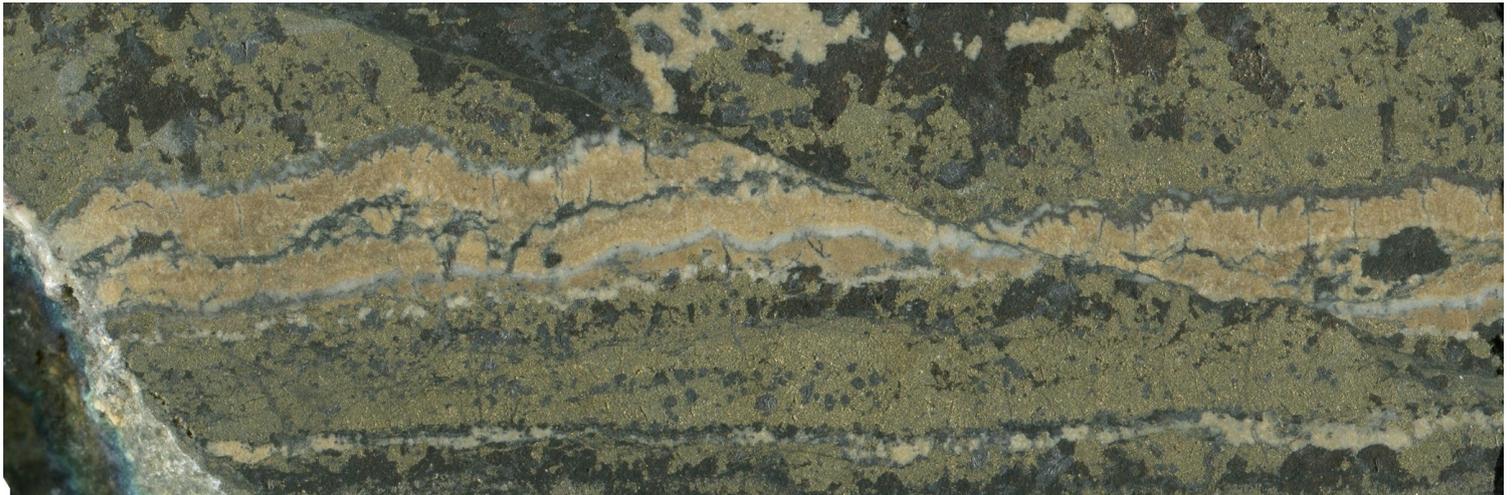
Robert.Scott@utas.edu.au

Website: <http://www.utas.edu.au/codes/masters-short-courses>

PROVISIONAL PROGRAM

WEEK 1: August 30—September 4

Monday August 30	Introduction to ore deposits	PRESENTERS: David Cooke, David Huston, Noel White
Tuesday August 31	Minerals in ores	PRESENTERS: Tim Callaghan, David Cooke, Larry Meinert, Noel White, Lejun Zhang
Wednesday September 1	Alteration	PRESENTERS: Cassidy Harraden, David Green, Francisco Testa, Lejun Zhang
Thursday September 2	Geochemical data acquisition, processing and interpretation	PRESENTERS: Noel White, Lejun Zhang
Friday September 3	Textures	PRESENTERS: David Cooke, Robert Scott
Saturday September 4	Paragenesis	PRESENTERS: Rodney Allen, David Cooke, Robert Scott



WEEK 2: September 27—October 1

Monday September 27	Metal zoning	PRESENTER: Francisco Testa
Tuesday September 28	Breccias	PRESENTERS: David Cooke, Francisco Testa
Wednesday September 29	Geophysical properties of ore deposits	PRESENTER: Michael Roach
Thursday September 30	Weathering environments, element mobility and supergene ores	PRESENTERS: David Cooke, Angela Escolme, Scott Halley, Noel White
Friday October 1	The economics of economic geology / controversies in economic geology	PRESENTERS: David Cooke, Glen Masterman, Rick Valenta, Noel White, Lejun Zhang, Masters students

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 / Affiliation:.....

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.

Please indicate

Minerals Geoscience Masters Program (MGM) Students:

(Excludes UTAS tuition fee)

Full course (free) - University of Tasmania enrolled

Full course (free) - University of Western Australia enrolled

Industry Participants:

Full course (\$3,300)

__ days at \$550/day (maximum charge 6 days)

CODES Staff/Students:

Short course classes (free, indicate days below)

Other Full-time Students:

Full course (\$550)

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

Week 1: 30 31 1 2 3 4 August—September

Week 2: 27 28 29 30 1 September—October

PAYMENT

Registrations are due by 24th of August, 2021. Full payment must be received by 27th of August, 2021.

Preferred payment method. Please indicate

Credit Card

Upon receipt of your registration form 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.

Cheque or Bank Draft

Please make cheques and bank drafts payable to "The University of Tasmania". Bank drafts must be made out in Australian currency (AUD).

Invoice

Name, address and email address for person responsible for payment of invoice:

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