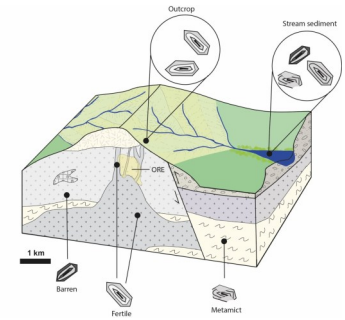
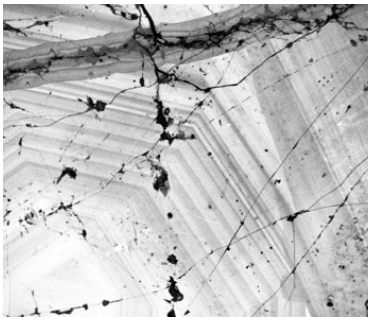
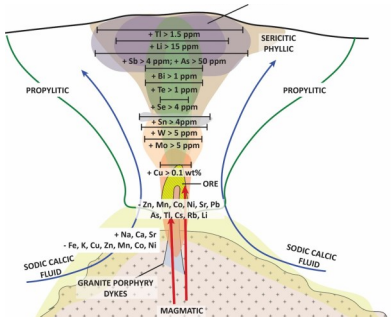
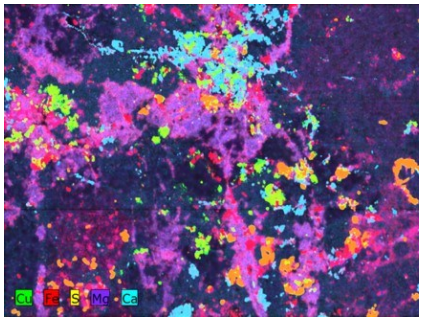
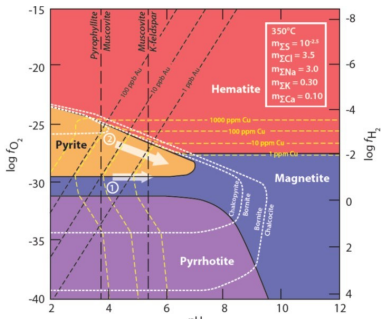










MASTER OF ECONOMIC GEOLOGY UNIT

via blended delivery

Ore Deposit Geochemistry, Hydrology and Geochronology

Week 1: 2—7 June, 2025 (in-person and online)

Week 2: 7—11 July, 2025 (in-person and online)

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

CODES

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

CRICOS Provider Code 00586B

CODES' Master of Economic Geology unit on Ore Deposit Geochemistry, Hydrology and Geochronology, is presented by a range of CODES and invited experts. It provides an up-to-date review of the theory and practice of geochemistry, hydrology and geochronology as applied to studies of mineral exploration and ore deposit genesis. The first week covers basic principles of ore fluid chemistry, the use of magmatic minerals and whole rock geochemistry in exploration, granite metallogeny, advanced geochemical exploration techniques, alteration mineral chemistry vectoring in porphyry and epithermal environments, and the uses of pyrite in mineral exploration (using samples provided by unit participants). The second week covers geochronology and radiogenic isotopic tracing for exploration, fluid-rock interaction and the physical hydrology of hydrothermal systems, and stable isotope and fluid inclusion applications for exploration.

PRESENTERS

INVITED SPEAKERS

Phil Blevin is Leader of Mineral Systems at the Geological Survey of NSW. He has extensive expertise in the relationships between igneous geochemistry and metallogenesis in eastern Australia.

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.

Nick Oliver is Principal and Consultant HCOV Global. He specializes in combining structural and geochemical approaches to understanding ore deposits and their associated hydrothermal systems. Nick was previously director of EGRU and Professor of Economic Geology at JCU.

John Walshe is an Honorary Research Fellow, CSIRO Mineral Resources. He has contributed to development of mineral systems concepts and application to mineral exploration. John is particularly interested in "deep-Earth" degassing processes as a fundamental driver of metallogenesis, particularly with respect to late Archean Au systems.

Lesley Wyborn is an Honorary Professor the Research School of Earth Sciences and the National Computational Infrastructure Facility at ANU. She is a specialist in Proterozoic granite geochemistry and in detecting regional footprints of granite-related mineral systems using online information systems and processing, including HPC.

CODES PRESENTERS

Sheree Armistead is a DECRA Research Fellow at CODES. Her research focuses on the links between plate tectonics and mineral systems, and the cyclical and secular changes of these throughout Earth's history. Sheree primarily uses isotope geochemistry, data science, GIS and plate reconstructions in her research.

Mike Baker is a Senior Research Fellow in Economic Geology at CODES, University of Tasmania. He has extensive research expertise in mineral chemistry and its applications to exploration for porphyry and epithermal deposits.

Ivan Belousov is a Senior Research Fellow in Geochemistry and Mineralogy at CODES Analytical Laboratories, specialising in LA-ICP-MS technique and its application for geochemistry, petrology and ore deposit studies.

Yamila Cajal is a Postdoctoral Research Fellow at CODES who applies petrology, geochemistry and geochronology to study ore-forming processes, specialising in magmatism and porphyry deposits.

Carlos Carrasco-Godoy is Lead Laboratory Analyst at CODES, specialising in zircon geochronology and geochemistry for mineral exploration.

David Cooke is the Director of CODES, the Centre for Ore Deposit and Earth Sciences. He has developed a global reputation for high quality research on porphyry copper and epithermal gold deposits and ore deposit geochemistry.

Matthew Cracknell is a Senior Lecturer in Geodata Analytics for the Discipline of Earth Sciences and CODES.

Wei Hong is a Researcher Fellow in Critical Minerals Characterisation at CODES. His research interest includes application of geochronology, mineral chemistry, and isotopes to the genesis and exploration of magmatic-hydrothermal ore deposits.

Sebastien Meffre is Professor at the University of Tasmania. He is the head of Earth Sciences and also works within CODES. His current research interests include improving techniques for dating rocks using the U-Pb isotopic system.

Paula Montoya is a Research Fellow in Economic Geology at CODES, specialising in the geochemistry of hydrothermal fluids formed through interactions between the mantle and the crust.

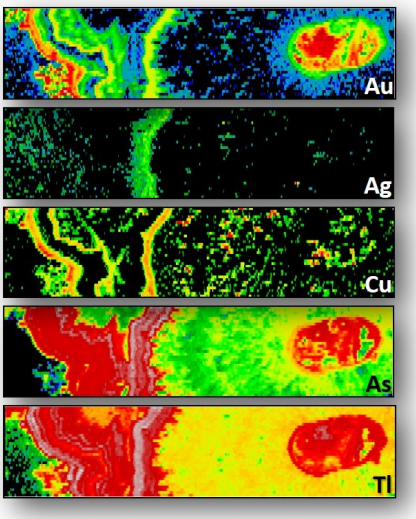
Jeff Oalmann is Manager of the CODES Analytical Laboratories, and has a background in geochronology and its applications in metamorphic petrology and geochemistry.

Robert Scott is the Coordinator of the Master of Economic Geology program at CODES, and Lecturer in Structural Geology in the Discipline of Earth Sciences at the University of Tasmania.

Jeff Steadman is a Postdoctoral Research Fellow in Geochemistry at CODES, specialising in mineral chemistry as a vector towards concealed gold, silver, and copper ore bodies.

Francisco Testa is a Postdoctoral Research Fellow and Lecturer in Economic Geology at CODES, specialising in ore deposit characterisation and the use of geochemical data to vector toward mineralisation centres.

Lejun Zhang is an Associate Professor at CODES and Earth Sciences specialising in the application of alteration mineral chemistry for enhancing exploration in green rock and lithocap environments, and vectoring using SWIR and whole-rock geochemical data.



Ore Deposit Geochemistry, Hydrology and Geochronology
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 60 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 60 months part-time (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 $2,328 per unit (8 in total) for domestic students (2025 rate for Commonwealth Supported Places) and $10,063 (AUD) per unit for full-fee paying overseas students (FFPOS) (2025 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, or a Graduate Certificate in Economic Geology (K5F). International students should be aware that English language proficiency requirements also apply.

Masters units offered by CODES

- 2 – 7 June & 7 – 11 July 2025:
  KEA709 Ore Deposit Geochemistry, Hydrology and Geochronology #
- 4 August – 31 October 2025 (Intensive Part 2: 15 – 19 September):
  KEA713 Geodata Analytics *
- 11 – 25 October 2025:
  KEA707 Ores in Magmatic Arcs (South America) ^
- 27 October – 1 November & 24 – 28 November 2025:
  KEA711 Geometallurgy ^
- February 2026:
  KEA718 Advanced Field Skills in Economic Geology ^
- March 2026:
  KEA708 Volcanology and Mineralisation in Volcanic Terrains (New Zealand, western Tasmania) ^
- April – May 2026:
  KEA716 Fundamentals of Economic Geology *
- June – July 2026:
  KEA712 Ore Deposit Models and Exploration Strategies #
- October – November 2026:
  KEA710 Exploration in Brownfield Terrains #
- March 2027:
  KEA707 Ores in Magmatic Arcs (Indonesia) ^

**** online delivery***
 # blended delivery (face to face and online)
^ face to face delivery

We want your pyrite!

Masters students and fee-paying participants for Day 6 (Application of pyrite trace element chemistry to studies of ore deposit genesis) are invited to provide a small pyritic rock sample for study during the unit. The trace element composition of pyrite in the sample will be mapped by LA-ICPMS in CODES' analytical facility prior to the unit. During the unit, participants will analyse the data from their sample, and make predictions about deposit type, proximity and fluid chemistry based on the observed patterns of trace element enrichment.

Pyritic samples from any deposit type will do, but general guidelines are:

- Pyrite formed below ~350°C is generally most informative. Pyrite from deposits with protracted mineralization histories is ideal.
- Pyrite from deposits formed at temperatures >400 degrees C (e.g. porphyry Cu deposits) or from highly metamorphosed deposits generally contains fewer trace elements and is less suitable for this exercise. If used, choose fresh samples from shallower areas or the fringes of porphyry deposits.
- Diagenetic pyrite can also be enriched in a variety of trace elements. Although in most cases these will not be ore-related, diagenetic pyrite can preserve complex growth histories and may be suitable for this exercise.
- Ideally, samples should be between 50 and 500 g, and contain pyrite grains 0.05 – 2 mm in size. Please avoid samples containing very coarse grained or abundant arsenopyrite (or other arsenic-rich minerals).

Samples should be delivered to CODES as soon as possible, and no later than 4 weeks before the start of the unit.

Send pyrite samples to:

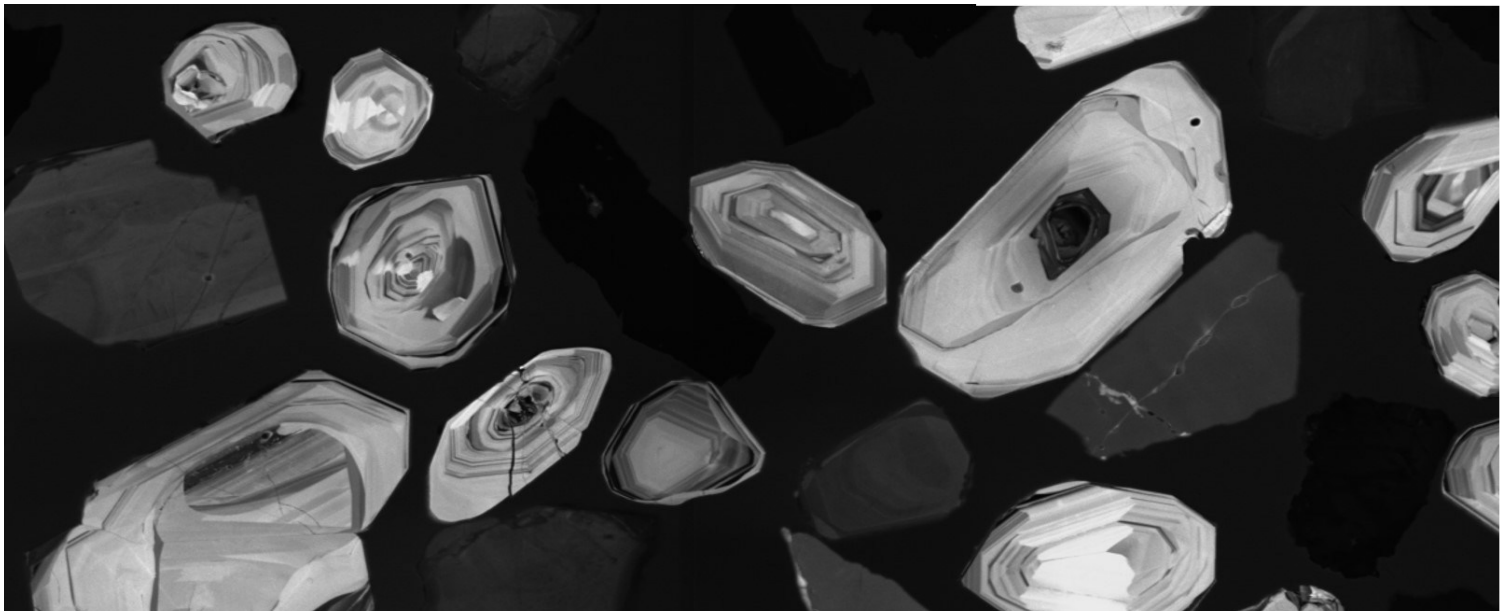
Dr Robert Scott
CODES, University of Tasmania
Clark Rd, Sandy Bay, Tasmania, Australia 7005

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: June 2—7

Monday June 2	Metal transport and ore-forming processes in hydrothermal systems—implications for ore genesis and exploration	**PRESENTER:** David Cooke
Tuesday June 3	Igneous geochemistry and magmatic mineral chemistry for exploration	**PRESENTERS:** Mike Baker, Yamila Cajal, Carlos Carrasco Godoy
Wednesday June 4	Granites and granite metallogeny	**PRESENTERS:** Phil Blevin, Lesley Wyborn
Thursday June 5	Enhanced geochemical exploration	**PRESENTER:** Scott Halley
Friday June 6	Mineral chemistry vectoring in porphyry and epithermal environments	**PRESENTERS:** Mike Baker, David Cooke, Matthew Cracknell, Wei Hong, Lejun Zhang
Saturday June 7	Application of pyrite trace element chemistry to studies of ore deposit genesis	**PRESENTERS:** Ivan Belousov, Robert Scott, Jeff Steadman



WEEK 2: July 7—11

Monday July 7	Radiometric dating techniques for exploration	**PRESENTERS:** Sebastien Meffre, Jeff Oalmann
Tuesday July 8	Radiometric dating (cont.); radiogenic isotopes, metallogeny & Earth Evolution	**PRESENTERS:** Sheree Armistead, Sebastien Meffre, Jeff Oalmann
Wednesday July 9	Hydrology and fluid-rock interaction in hydrothermal systems	**PRESENTER:** Nick Oliver
Thursday July 10	Fluid inclusions and stable isotopes—applications for mineral exploration and ore genesis; Mapping chemical gradients using stable isotopic and other datasets—insights for exploration and mineral system processes	**PRESENTERS:** Paula Montoya, Francisco Testa, John Walshe
Friday July 11	Student presentations and wrap-up	**PRESENTERS:** Robert Scott, students

REGISTRATION FORM

Ore Deposit Geochemistry, Hydrology and Geochronology

Week 1: 2–7 June, 2025

Week 2: 7–11 July, 2025

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): .....

Dietary requirements / allergies / other health issues (for in-person attendance only): .....

.....

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) & Graduate Certificate in Economic Geology Students:

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

Industry Participants:

☐ Full training unit ($3,900)- in person
☐ __ days at $650/day in-person (max charge $3,900, indicate days below)
☐ Full training unit ($3,600)- online only option
☐ __ days at $600/day online (max charge $3,600, indicate days below)

CODES Staff/Students:

☐ Unit classes (free, indicate days below)

Other Full-time Students *(proof of current student status required)*:

☐ A limited number of online only 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:	2	3	4	5	6	7	June
Week 2:	7	8	9	10	11		July

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

PAYMENT

Registrations are due by 16th of May, 2025. Full payment must be received by 25th of May, 2025.

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)