

MASTER OF ECONOMIC GEOLOGY UNIT

Geometallurgy

16–27 October, 2023

A comprehensive overview of practical geometallurgy: From mineral processing fundamentals to deposit characterisation.



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

CRICOS Provider Code 00586B

Geometallurgy involves a quantified and comprehensive approach to ore characterisation in terms of critical processing attributes such as crushing, grinding, liberation, recovery and environmental management. Key outcomes of increased geometallurgical knowledge are improved forecasting, reduced technical risk, enhanced economic optimisation of mineral production, and improved sustainability.

This unit introduces a range of techniques for 'early-stage' (e.g., exploration, prefeasibility) collection of geological information that is relevant to mining engineers and metallurgists. The program

includes lectures, practical exercises (including a computer-based modelling exercise) and a field trip to western Tasmania.

Registration fees cover the cost of unit notes and the field trip (transport and accommodation). Participants are responsible for air travel to/from Hobart and accommodation in Hobart.

Participants must have access to a computer with Microsoft Excel installed. It is recommended that all participants are familiar with the use of Microsoft Excel. Instruction in the use of other software (e.g. ioGas) will be provided during the course.

Geometallurgy
is offered as a unit of the national Minerals Geoscience Masters program.

MASTER OF ECONOMIC GEOLOGY

THE MOST COMPREHENSIVE MASTERS 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 (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 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 be aware that English language proficiency requirements also apply.

Masters units offered by CODES

- 7 August—15 October 2023 (Intensive Part 2: 18-22 September):
KEA713 Geodata Analytics *
- 16–27 October 2023:
KEA711 Geometallurgy ^
- 25 October – 11 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
- August—October 2024:
KEA713 Geodata Analytics *
- 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

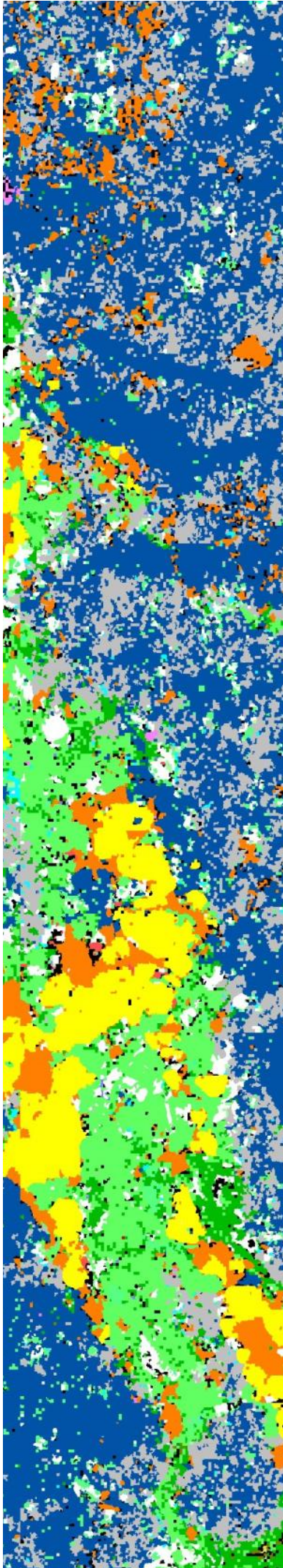
blended delivery (week 1 face to face/online; week 2 online)

^ face to face delivery

For further information contact:

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Email: CODES.Info@utas.edu.au
Robert.Scott@utas.edu.au
Website: utas.edu.au/codes/masters-short-courses

INVITED PRESENTERS



Toni Kojovic is a highly accomplished and recognized leader in the field of mining and mineral processing. Toni is the managing director of SimSAGE and a comminution consultant with more than 30 years of experience, both as a Senior Researcher with the JKMRC and as Manager of Technical and Applied Research at Teck Cominco's Red Dog Mine in Alaska.

Scott Halley is a highly regarded consultant specialising in applied litho-geochemistry for geochemical exploration and mineral mapping. Scott has consulted to over 100 mining and exploration companies. He is an expert in the application of SWIR and whole-rock geochemical data to understand deposit mineralogy.

Laurence Dyer is a senior lecturer and Discipline Lead - Metallurgical Engineering at Curtin University. His research interests lie in leaching, adsorption and precipitation and he has worked extensively in precious metal, rare earth, nickel and copper extraction as well as iron chemistry. Laurence is currently investigating precious metal tellurides and identifying alternative treatment methods for rare earth minerals.

David Green is a geologist and HyLogger specialist from Mineral Resources Tasmania.

Industry case studies will be presented from specially selected geometallurgists and ore body knowledge representatives. Case studies will provide examples of best practice approaches to the industry application of geometallurgical studies to mitigate risk, solve problems and realise opportunity.

Bill Staunton is a former Manager and now Consultant of the Gold Technology Group and Amira P420 Gold Processing Technology Project at the WA School of Mines, Curtin University. Bill has been involved with the gold industry for more than 35 years, covering basic research plant surveys and optimisation, process modelling and training/professional development.

Sefton Darby leads Voconiq's advisory and consultancy function working with clients to improve performance in trust, social impacts and community sentiment. He has previously worked on public policy and natural-resource governance issues for a variety of NGOs, governments, corporations and international organisations.

CODES Presenters:

Matthew Cracknell

Mohammad Fathi

Julie Hunt

Sebastien Meffre

Owen Missen

CSL (Central Science Laboratory), UTAS Presenters:

Thomas Rodemann

Sandrin Feig



PRELIMINARY PROGRAM

Monday 16th October

Introduction to geometallurgy — Julie Hunt

Participant introductions

Sample selection and preparation — Julie Hunt

LA-ICPMS Au — Sebastien Meffre

Characterisation tools and techniques — Sandrin Feig, Thomas Rodemann, David Green (MRT)

Tuesday 17th October

Comminution — Toni Kojovic (SimSAGE)

Sustainability and SLO — Sefton Darby (Voconiq)

Wednesday 18th October

Statistics — Toni Kojovic (SimSAGE)

Gold processing — Bill Staunton (Curtin)

Thursday 19th October

MRT core facility — HyLogger

CSL and CODES lab facilities and tools

Hydrometallurgy and pyrometallurgy — Laurence Dyer (Curtin)

Friday 20th October

Mineralogy from geochemistry — Scott Halley (Mineral Mapping)

Project introduction — UTAS staff

Saturday 21st October

Flotation recovery — Mohammad Fathi

Sunday 22nd October — Tuesday 24th October

Field trip to western Tasmanian mines and processing plants

Wednesday 25th October

Image analysis and data analytics — Matthew Cracknell

Environmental geology — Owen Missen

Thursday 26th October

Industry case studies (TBC)

Friday 27th October

Geomet industry application — (TBC)

Student presentations



REGISTRATION FORM

Geometallurgy

16-27 October, 2023

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):

Dietary requirements / allergies / other health issues:

Emergency contact (name and email/phone contact):

REGISTRATION FEES

All fees are in Australia dollars (AUD) and include GST. Fees do not include tuition costs for enrolled students, accommodation in Hobart, or airfares to/from Hobart.

Please indicate

Minerals Geoscience Masters Program (MGM) Students:

Field fee

University of Tasmania enrolled: \$450

University of Western Australia enrolled: \$450

Industry Participants:

6+ days in-person (incl field trip): \$3,900*

__ days at \$650/day in-person (maximum charge 6 days)

6-9 days virtual attendance: \$3,600

__ days at \$600/day virtual attendance (maximum charge 6 days)

CODES Staff/Students:

On campus classes (free, indicate days below)

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

Full unit (incl field trip): \$1,000*

Full unit (9 days) virtual attendance: \$550*

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

16 17 18 19 20 21
October
25 26 27

* In-person participant numbers are capped, with preference to enrolled MGM students. Other interested parties will be advised if they have secured a place on the course by 10th September, 2023.

PAYMENT

Registrations are due by 8th September, 2023. Full payment must be received by 30th September, 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:

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

MGM STUDENTS: THIS FORM DOES NOT CONSTITUTE AN OFFICIAL UNIVERSITY ENROLMENT—YOU MUST ALSO ENROL VIA ESTUDENT AND ENSURE TUITION FEES ARE PAID BY THE PAYMENT DEADLINE (OCTOBER 24).