

MASTER OF ECONOMIC GEOLOGY SHORT COURSE

# Geodata Analytics

8 February—16 April 2021

Delivery will be in English, and interactive sessions (Module 2) will occur between 9AM - 5PM AEDT (+11UTC)



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

CRICOS Provider Code 00586B



UNIVERSITY of  
TASMANIA

AUSTRALIA

**Geodata Analytics**  
*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 \$2,381 per unit (8 in total) for domestic students (2020 rate, 2021 rates to be released shortly) 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

A 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.

#### Courses offered by CODES

- KEA707 Ores in Magmatic Arcs (NSW & Qld):  
26 November – 8 December 2021
- KEA708 Volcanology and Mineralisation in Volcanic Terrains (New Zealand, western Tasmania):  
March 2022
- KEA709 Ore Deposit Geochemistry, Hydrology and Geochronology:  
31 May–5 June & 5–9 July 2021
- KEA710 Exploration in Brownfield Terrains:  
June 2022
- KEA711 Geometallurgy:  
18–29 October 2021
- KEA712 Ore Deposit Models and Exploration Strategies:  
October 2022
- KEA713 Geodata Analytics:  
February–April 2021 (22–27 March- intensive Module 2)
- KEA716 Fundamentals of Economic Geology:  
30 August – 10 September 2021
- KEA718 Advanced Field Skills in Economic Geology:  
7–20 February 2021

#### **For further information contact:**

Dr Robert Scott  
Masters Coordinator, CODES  
Private Bag 79, Hobart 7001, Australia  
Tel: +61 3 6226 2786  
Email: [Robert.Scott@utas.edu.au](mailto:Robert.Scott@utas.edu.au)  
[CODES.Info@utas.edu.au](mailto:CODES.Info@utas.edu.au)  
Website: <http://www.utas.edu.au/codes/masters-short-courses>

## PRELIMINARY PROGRAM

### MODULE 1 - FUNDAMENTALS

Online self-directed & self-paced learning

8 February—19 March 2021 (6 weeks)

Basic statistics, databases and exploratory data analysis, data formats and data preparation such as filtering and transformation, classification and querying of database queries, image analysis and segmentation. Peer-review of literature and a case study involving data analytics.

*Lesson topics:*

- Data analytics and basic statistics
- Databases and data wrangling
- Data transforms, dimensionality reduction and text processing
- Unsupervised learning
- Supervised learning
- Image processing

### MODULE 2 - METHODS AND TOOLS

Online lectures and practicals— intensive delivery

22—27 March 2021 (1 week)

Identify, integrate and process relevant data to produce models, carry out analysis and visualization with an emphasis on reproducibility and reporting outcomes. Datasets will focus on mineral exploration or mining-related problems.

*Lecturer expertise:*

- Geological databases and online data access
- Compositional data analysis
- Text processing and mining
- Network analysis
- Unsupervised learning and segmentation
- Supervised image classification
- Deep learning

### MODULE 3 - COLLABORATION, INTERPRETATION AND COMMUNICATION

Online self-directed & collaborative self-paced learning

29 March—16 April 2021 (4 weeks)

Using a variety of geoscience datasets and working both individually and in groups, students will carry out a series of data analyses to, for example, identify prospective areas in mineral exploration environment, or predict rock properties around a mine. Students will be required to integrate their analyses and findings in small groups and contribute to an online seminar.

*In the geosciences, as in all areas of human endeavour, the amount and availability of digital data is increasing exponentially. Increasingly, industry-based geoscientists will be expected to use sophisticated, cost-effective and innovative methods to process and interpret large amounts of multivariate digital data to enhance insight, decision making, and process automation. This rapid and ongoing shift from manual to automated methods for modelling complex geological phenomena has resulted in a knowledge gap. This limits the possible degree of understanding and knowledge to be gained from data or in the worst case, poor choices for analyses may lead to erroneous interpretations.*

*The Geodata Analytics short course is a timely addition to the CODES Master of Economic Geology degree and will focus on rigorous and reproducible methods for extracting and visualising meaningful information from geological data. Participants will learn data science fundamentals, how to design and construct automated workflows and communicate resultant models to aid collaborative interpretation and facilitate decision making.*

*This short course is divided into three modules delivered online and in succession.*

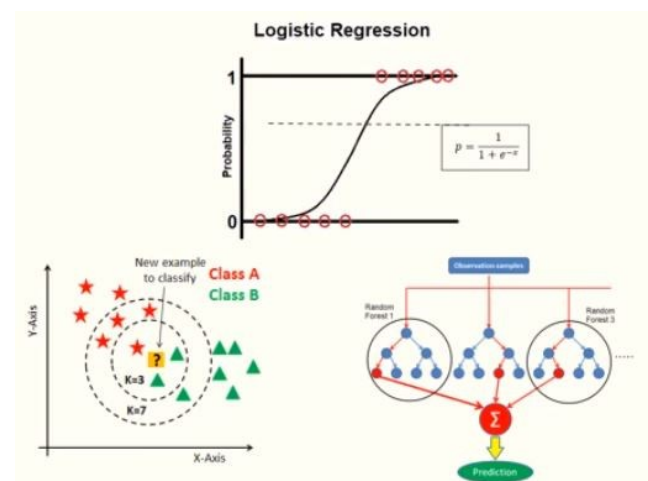
## COURSE PRESENTERS

**Matthew Cracknell** is a Lecturer and Researcher at CODES. He is an expert in geoscience data analysis, modelling and visualisation.

Guest presenters for the course will be confirmed soon.

## COURSE INFORMATION

Participants should ensure they have admin rights on their computer. Those completing Modules 2 and 3 will also need to be able to access/use various platforms/software packages such as Youtube and Zoom in order to complete assessment items. More information will be provided in an FAQ document once registration is complete.



# REGISTRATION FORM

## Geodata Analytics

8 February—16 April 2021

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.

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)\*
- Module one (\$990)
- Module two (requires completion of Module one) (\$1,650)\*
- Module three (requires completion of Module two) (\$1,650)\*

#### Other Full-time Students:

- Full course (\$550)\*
- Module one (\$165)
- Module two (requires completion of Module one) (\$275)\*
- Module three (requires completion of Module two) (\$275)\*

\* Participant numbers for Modules two and three are capped, with preference to enrolled MGM students. Other interested parties will be advised whether their preferred participation option is available by February 2nd.

### PAYMENT

Registrations are due by the 28th of January, 2021. Full payments are due by the 7th of February, 2021.

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.
- 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 or post original to CODES.Info@utas.edu.au**