GEOS929

Geophysical Data Processing

S2 Day 2019

Dept of Earth and Environmental Sciences

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General Information

Unit convenor and teaching staff Mark Lackie mark.lackie@mq.edu.au 12WW (E7A) Room 108
Credit points 4
Prerequisites Permission by special approval
Corequisites
Co-badged status
Unit description This unit is intended primarily to introduce students to advanced techniques and exploration practice in geophysical processing and interpretation. Students utilise commercial geophysical packages to process and interpret geophysical data sets. The unit will be a more applied than theoretical offering with students learning to use a range of packages and interpretation techniques common in geophysical applications.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

1. Students will be able to utilise geophysical software to solve geological problems
2. Students will acquire new computational skills
3. Students will be able to process raw geophysical data to best highlight geological information
4. Competence in accessing, using and synthesising appropriate information
5. Application of knowledge to solving problems and evaluating ideas and information
6. Capacity to present ideas clearly with supporting evidence

General Assessment Information

If you receive special consideration for the final exam, a supplementary exam will be scheduled

in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
Assignment I	15%	No	See schedule
Assignment II	15%	No	See schedule
Assignment III	15%	No	See schedule
Assignment IV	10%	No	See Schedule
Assignment V	20%	No	See Schedule
Oral Presentation	10%	No	See schedule
Field Report	15%	No	End of Semester

Assignment I

Due: **See schedule**
Weighting: **15%**

ModelVision Exercises

On successful completion you will be able to:

- 1. Students will be able to utilise geophysical software to solve geological problems
- 2. Students will acquire new computational skills
- 3. Students will be able to process raw geophysical data to best highlight geological information
- 4. Competence in accessing, using and synthesising appropriate information
- 6. Capacity to present ideas clearly with supporting evidence

Assignment II

Due: **See schedule**
Weighting: **15%**

MAPINFO/Discover/ArcGIS exercises

On successful completion you will be able to:

- 1. Students will be able to utilise geophysical software to solve geological problems
- 2. Students will acquire new computational skills
- 4. Competence in accessing, using and synthesising appropriate information

Assignment III

Due: **See schedule**
Weighting: **15%**

Geosoft exercises

On successful completion you will be able to:

- 1. Students will be able to utilise geophysical software to solve geological problems
- 2. Students will acquire new computational skills
- 4. Competence in accessing, using and synthesising appropriate information
- 6. Capacity to present ideas clearly with supporting evidence

Assignment IV

Due: **See Schedule**
Weighting: **10%**

ERMAPPER exercises

On successful completion you will be able to:

- 1. Students will be able to utilise geophysical software to solve geological problems
- 2. Students will acquire new computational skills
- 4. Competence in accessing, using and synthesising appropriate information
- 5. Application of knowledge to solving problems and evaluating ideas and information
- 6. Capacity to present ideas clearly with supporting evidence

Assignment V

Due: **See Schedule**
Weighting: **20%**

Interpretation exercise

On successful completion you will be able to:

- 2. Students will acquire new computational skills

- 3. Students will be able to process raw geophysical data to best highlight geological information
- 4. Competence in accessing, using and synthesising appropriate information
- 5. Application of knowledge to solving problems and evaluating ideas and information
- 6. Capacity to present ideas clearly with supporting evidence

Oral Presentation

Due: **See schedule**
Weighting: **10%**

Seminar on a specialist paper.

On successful completion you will be able to:

- 3. Students will be able to process raw geophysical data to best highlight geological information
- 4. Competence in accessing, using and synthesising appropriate information
- 6. Capacity to present ideas clearly with supporting evidence

Field Report

Due: **End of Semester**
Weighting: **15%**

Scientific report after acquiring and processing some geophysical data

On successful completion you will be able to:

- 3. Students will be able to process raw geophysical data to best highlight geological information
- 4. Competence in accessing, using and synthesising appropriate information
- 5. Application of knowledge to solving problems and evaluating ideas and information
- 6. Capacity to present ideas clearly with supporting evidence

Delivery and Resources

There is no textbook for the unit. A copy of DENTITH AND MUDGE (QC807 .D46 2014) or SHARMA (QE501.3.S48) or (TA705.S515/1997), or PARASNIS (TN269P32) or REYNOLDS (QC808.5.R49) or TELFORD (TN269.T44) or KEAREY and BROOKS (TN269.K36) or MUSSETT and KHAN (QE501.M87) would be useful to have around. Copies of relevant sections of the software manuals are on all the computers and I will make them available on the iLearn WEBSITE at https://ilearn.mq.edu.au/login/MQ/ . I will post the assignments and PDFs of relevant sections of the manuals on that site.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- 1. Students will be able to utilise geophysical software to solve geological problems
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- 6. Capacity to present ideas clearly with supporting evidence

Assessment tasks

- Assignment I
- Assignment II

- Assignment III
- Assignment IV
- Assignment V
- Oral Presentation
- Field Report

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- 3. Students will be able to process raw geophysical data to best highlight geological information
- 6. Capacity to present ideas clearly with supporting evidence

Assessment tasks

- Assignment I
- Assignment V
- Field Report

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- 3. Students will be able to process raw geophysical data to best highlight geological information
- 5. Application of knowledge to solving problems and evaluating ideas and information

Assessment tasks

- Assignment V
- Oral Presentation

- Field Report

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- 1. Students will be able to utilise geophysical software to solve geological problems
- 2. Students will acquire new computational skills
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