Description

The theory and practice of potential field, electrical and electromagnetic methods. Topics include: basic theory, theory of potential field methods, data acquisition, data processing and interpretation of gravity and magnetic data and of electrical data.

Aims

To prepare graduate students for the research tasks ahead of them, with regards to geophysics, and particularly potential field methods (Magnetics, Gravity) and electromagnetics (MT). The class is split in practical and more theoretical modules.

Skills and knowledge to be gained

Students who pass this course should be able to:

- proceed with research-grade thesis projects in this area of geophysics
- collect, process, and interpret geophysical observations associated with these methods
- have a graduate-level understanding of the physical processes associated with these methods

Syllabus

- Module 1: Geophysical Inverse Theory for potential methods
- Module 2: Data processing and interpretation of potential field data
- Module 3: Potential field parameters in a complex Earth

Learning activities and teaching methods

<table>
<thead>
<tr>
<th>Description</th>
<th>Study time</th>
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<tbody>
<tr>
<td>Lectures 10 X 2 hours</td>
<td>20 hours</td>
</tr>
<tr>
<td>Assignments 3</td>
<td>3x8 hours</td>
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<tr>
<td>Laboratory work 0</td>
<td>0 hours</td>
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<tr>
<td>Private study (3 hours/lecture)</td>
<td>30 hours (recommended)</td>
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Inclusive learning

Students are urged to discuss privately any impairment-related requirements face-to-face and/or in written form with the course convenor/lecturer and/or tutor.
Assessment

<table>
<thead>
<tr>
<th>Form</th>
<th>Weight</th>
<th>Time</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>45%</td>
<td>8 hours per assignment</td>
<td>Weeks 3,6,9</td>
</tr>
<tr>
<td>Exam</td>
<td>55%</td>
<td>3 hours</td>
<td>exam period</td>
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Academic Integrity
The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting his or her learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the world-wide web. A student's assessed work may be reviewed against electronic source material using computerised detection mechanisms. Upon reasonable request, students may be required to provide an electronic version of their work for computerised review. Please visit the below link for further information: https://www.auckland.ac.nz/en/about/learning-and-teaching/policies-guidelines-and-procedures/academic-integrity-info-for-students.html

Resources
Snieder and van Wijk, Mathematical methods for the physical sciences, third edition, Cambridge University Press

Feedback
Marked script and model solutions to assignments; marked exam script (if requested)

Enrolment
Typical enrolment Semester 2: 5-10