

## ERTH20002 Environmental Geosciences

<b>Credit Points:</b>	12.5
<b>Level:</b>	2 (Undergraduate)
<b>Dates &amp; Locations:</b>	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 2 hours of lectures per week over 12 teaching weeks, 2 hours of practical class per week over 12 teaching weeks, 2 full days (8 hours/day) field exercises during week 9/10 Total Time Commitment: Estimated Total Time Commitment - 170 hours
<b>Prerequisites:</b>	None
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	Knowledge of basic algebra and chemistry fundamentals will be assumed in this subject.
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	<p>&lt;p&gt;For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.&lt;/p&gt; &lt;p&gt;It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: &lt;a href="http://services.unimelb.edu.au/disability"&gt;http://services.unimelb.edu.au/disability&lt;/a&gt;&lt;/p&gt;</p>
<b>Coordinator:</b>	Prof Ralf Haese
<b>Contact:</b>	Email: ralf.haese@unimelb.edu.au
<b>Subject Overview:</b>	This subject examines man-made perturbations in a range of environmental systems by determining changes to physical-chemical processes at the Earth's surface. Case studies are presented discussing issues such as groundwater drawdown from mining, ocean acidification from rising CO <sub>2</sub> in the atmosphere, acid mine drainage and the risks and benefits of geological CO <sub>2</sub> storage and of unconventional gas production. The underlying processes are illustrated and the impacts are both qualitatively and quantitatively assessed, for example, by using a mass balance approach, reconstructing the groundwater flow field or by deriving imposed changes to chemical reactions and reaction rates at the Earth surface. Time scales of current perturbations are examined in the context of environmental changes in the geological past.
<b>Learning Outcomes:</b>	The students will acquire broad knowledge about man-made perturbations to physical-chemical processes at the Earth surface related to the utilisation of geo-resources. The practical classes will foster a rigorous, critical and logical approach to problem-solving. Students will learn the fundamentals of environmental physical conditions (e.g. hydrostatic gradient, slope stability) and will be taught the basics of chemical/mineralogical/microbial driven reactions and mass transfer (fluid-rock equilibrium, global carbon cycle, regional nutrient and water budgets). Students learn the methodology to assess some of the impacts of human changes to environmental processes.
<b>Assessment:</b>	5 written tests as part of practical classes (30 mins each) due at the beginning of every second practical, starting week 4 (30%) Field report, maximum of 1500 words/one week to complete due week 10 (20%) 2 hour written theory exam (50%)
<b>Prescribed Texts:</b>	A course specific reader will be available.

<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-ARTS">https://handbook.unimelb.edu.au/view/2015/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-COM">https://handbook.unimelb.edu.au/view/2015/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-ENVS">https://handbook.unimelb.edu.au/view/2015/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-MUS">https://handbook.unimelb.edu.au/view/2015/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>Students will have the opportunity to gain/practice the following generic skills:</p> <ul style="list-style-type: none"> <li># critical thinking</li> <li># teamwork</li> <li># data analysis and interpretation</li> <li># problem solving.</li> </ul>
<b>Related Majors/Minors/ Specialisations:</b>	<p>Environments Discipline subjects Science-credited subjects - new generation B-SCI and B-ENG.</p>