

## 625-202 Earth Structure and Dynamics

<b>Credit Points:</b>	12.50
<b>Level:</b>	2 (Undergraduate)
<b>Dates &amp; Locations:</b>	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus. Lectures, practical work and fieldwork.
<b>Time Commitment:</b>	Contact Hours: 24 lectures (two per week), 24 hours of practical work (two hours per week), and four days of fieldwork (held on weekends during the semester) Total Time Commitment: 120 hours total time commitment.
<b>Prerequisites:</b>	<i>The Earth, Atmosphere and Oceans</i> or 625-102 (prior to 2008). Plus <i>Earth Composition, Minerals and Magmas</i> (can be taken concurrently) (625-222 Minerals and Magmas prior to 2009)
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	Credit cannot be gained for both this subject and 625-224 (prior to 2004).
<b>Core Participation Requirements:</b>	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. This subject requires all students to actively and safely participate in laboratory activities and fieldwork. Students who feel their disability may impact upon their participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.
<b>Coordinator:</b>	Dr Sandra Noeline McLaren
<b>Subject Overview:</b>	<p>This subject will investigate the structure and dynamics of planet Earth and the processes that control the mineral assemblages and fabric of rocks in the Earth's crust and mantle.</p> <ul style="list-style-type: none"> <li># Topics to be covered include:</li> <li># Structure of planet Earth from geophysical observations;</li> <li># Mantle convection and geodynamics;</li> <li># Controls on deformation in the Earth; stress-strain relationships</li> <li># Manifestation of deformation in rocks: descriptive treatment of strain, folds and cleavage;</li> <li># Examination of deformed rocks in the laboratory and in the field;</li> <li># Controls on mineral assemblages in the Earth: pressure, temperature and rock composition</li> <li># Relationship between mineral assemblages in metamorphic rocks and their conditions of formation;</li> <li># Metamorphic rocks in thin section and in hand specimen;</li> <li># The analysis of orogenic belts</li> </ul>
<b>Objectives:</b>	<p>At the end of this subject, students should have acquired an understanding of tectonic settings, the effects of elevated pressure, temperature and stress on rocks; be able to recognise, describe and interpret rocks formed as a consequence of these effects in the laboratory and in the field; and understand their applications in establishing and testing tectonic models.</p> <p>This subject builds upon skills developed in first year and integrates with the co-requisite subject <i>Earth Composition, Minerals and Magmas</i> as well as <i>Earth Surface Processes</i>. This combination of subjects will provide an overview of the composition and structure of the Earth and the processes that continue to shape it. In this subject, analytical skills will be developed and augmented through the evaluation of geophysical data and examination of the effects of deformation and metamorphism on rocks and minerals. Thus, many of the techniques you learn about here will apply to a broad range of geological situations. For those wishing to pursue their study of Geology, other second- year subjects and almost all third-year subjects will use or build</p>

	upon the information you gain here. Before we can proceed to use more sophisticated methods of unravelling Earth processes however, a solid background is required in understanding the fundamental insights that can be provided by careful observations of rocks and minerals.
<b>Assessment:</b>	A 2-hour practical examination during the semester (20%); a 1500-word field report due at the end of semester (20%); a 2-hour written examination in the examination period (60%).
<b>Prescribed Texts:</b>	None
<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/2009/D09">https://handbook.unimelb.edu.au/view/2009/D09</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2009/F04">https://handbook.unimelb.edu.au/view/2009/F04</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2009/A04">https://handbook.unimelb.edu.au/view/2009/A04</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2009/M05">https://handbook.unimelb.edu.au/view/2009/M05</a>)</li> </ul> <p>You should visit <a href="http://breadth.unimelb.edu.au/breadth/info/index.html">learn more about breadth subjects (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>At the end of this subject, students will have acquired an understanding of tectonic processes and settings, the effects of elevated pressure, temperature and stress on rocks; be able to recognise, describe and interpret rocks formed as a consequence of these effects in the laboratory and in the field; and understand their applications in establishing and testing tectonic models.</p> <ul style="list-style-type: none"> <li># This subject will provide opportunities to:</li> <li># Develop personal and communication skills relevant to group discussions;</li> <li># Think critically and to conceptualise complex and abstract ideas;</li> <li># Develop skills relevant to preparing technical written reports;</li> <li># Develop time management skills needed to meet assessment deadlines.</li> </ul>
<b>Notes:</b>	<p>Students enrolled in the BSc (both pre-2008 and new degrees), BAsc or a combined BSc course will receive science credit for the completion of this subject.</p> <p><i>Earth Structure and Dynamics</i> was 625-202 Sedimentary Basins to Mountain Belts (prior to 2009).</p> <p>Special Requirements: Geological hammer, hand lens and magnet. Students should consult the Earth Sciences web site for dates, charges for excursions, accommodation and food and other information including safety requirements.</p>