

# GEOL90007 Geochemistry and Geochronology

|  |   |
|--|---|
| <b>Credit Points:</b>                    | 12.5  |
| <b>Level:</b>                            | 9 (Graduate/Postgraduate)   |
| <b>Dates &amp; Locations:</b>            | 2015, Parkville<br>This subject commences in the following study period/s:<br>Semester 1, Parkville - Taught on campus.<br>Some parts of this subject may be taught off-campus.   |
| <b>Time Commitment:</b>                  | Contact Hours: Sixty hours. Specific activities will depend upon selected modules, but will be either class-room based workshop and/or field-based short course intensive-style, with each module delivered over a single full-time week of study. Total Time Commitment: 170 hours   |
| <b>Prerequisites:</b>                    | None  |
| <b>Corequisites:</b>                     | None  |
| <b>Recommended Background Knowledge:</b> | None  |
| <b>Non Allowed Subjects:</b>             | None  |
| <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. 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>                      | Assoc Prof Kevin Walsh  |
| <b>Contact:</b>                          | Email: <a href="mailto:kevin.walsh@unimelb.edu.au">kevin.walsh@unimelb.edu.au</a> ( <a href="mailto:kevin.walsh@unimelb.edu.au">mailto:kevin.walsh@unimelb.edu.au</a> )   |
| <b>Subject Overview:</b>                 | This subject comprises two short-course intensive modules designed to illustrate how knowledge of geochemistry and/or geochronology can be used to develop an interpretation of the geological history of a region, the petrogenesis of a suite of related rocks, or chemical signatures in the regolith and groundwater. The subject will involve a series of concept lectures, will cover the techniques of geochronology, and the use of geochemistry in unravelling the processes influencing the formation of rocks and minerals. Depending on the modules selected, the subject may involve a field component of study.   |
| <b>Learning Outcomes:</b>                | This subject aims to: <ul style="list-style-type: none"> <li># equip students with discipline-specific knowledge and expertise appropriate for post-graduate research in the field;</li> <li># equip students with discipline-specific knowledge and expertise enabling them to take their place as professional geologists in industry or government organisations.</li> </ul> Depending upon the specific modules selected, this subject will provide students with the confidence and competence to: <ul style="list-style-type: none"> <li># employ geochemical and/or geochronological data to determine the relationships between magmatism, metamorphism, deformation and sedimentation;</li> <li># hone their field mapping techniques;</li> <li># recognise alteration in host-rock sequences;</li> <li># identify processes operating in natural aqueous systems using natural chemical tracers;</li> <li># describe ways in which contamination can occur and be detected;</li> <li># assess and implement appropriate exploration tools (geochemical, biochemical, geophysical) within the context of the basement and cover geology and the nature of the target;</li> </ul> |

|   |  |
|---|--|
|   | <ul style="list-style-type: none"> <li># describe regolith materials, including mineralogy and geochemistry;</li> <li># explain element dispersion and/or concentration in the regolith;</li> <li># describe exploration methods using geochemistry and geophysics for mineralisation within and below the regolith; and</li> <li># appreciate the different sampling and analytical methods for regolith, water and biota.</li> </ul>   |
| <b>Assessment:</b>                            | <p>This subject comprises two short-course intensive modules, each equally weighted towards the final grade. The specific assessment details will depend upon the modules selected and students are directed to the outlines for each short-course for further details. Assessment tasks will be completed within the duration of the module, or within two weeks of its completion. Tasks required are broadly based upon 4,000 words equivalent for the entire subject, with a one-hour examination or 15 minute oral examination or presentation equivalent to approximately 1,000 words. Thus, a short course module may require a two- hour examination, a one-hour examination and a 15 minute presentation or 1,000 word assignment, or field reports, maps and cross sections equivalent of 2,000 words. For example, in the case of one short course that may be selected for this subject, the assessment can be described as "Submission of selected practical problems totalling no more than 1,000 words and a one-hour open book multiple choice examination on last day of course".</p> |
| <b>Prescribed Texts:</b>                      | None   |
| <b>Recommended Texts:</b>                     | Texts will vary depending upon choice of modules.  |
| <b>Breadth Options:</b>                       | This subject is not available as a breadth subject.  |
| <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>All modules available to this subject seek to assist students in developing their ability to:</p> <ul style="list-style-type: none"> <li># exercise critical judgement;</li> <li># undertake rigorous and independent thinking;</li> <li># adopt a problem-solving approach to new and unfamiliar tasks.</li> </ul> <p>Depending upon which modules are selected, students will have the opportunity to:</p> <ul style="list-style-type: none"> <li># develop high-level written report and/or oral presentation skills;</li> <li># interrogate, synthesise and interpret the published literature;</li> <li># work as part of a team.</li> </ul>   |
| <b>Related Course(s):</b>                     | Master of Science (Earth Sciences)   |
| <b>Related Majors/Minors/Specialisations:</b> | <p>Earth Sciences<br/>                 Earth Sciences<br/>                 Honours Program - Earth Sciences</p>  |