

## GEOL90005 Hydrogeology

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| <b>Credit Points:</b>                    | 12.50  |
| <b>Level:</b>                            | 9 (Graduate/Postgraduate)  |
| <b>Dates &amp; Locations:</b>            | 2010, Parkville<br>This subject commences in the following study period/s:<br>Semester 1, Parkville - Taught on campus.<br>Lectures and practical sessions, plus 1-2 day Field Excursion.  |
| <b>Time Commitment:</b>                  | Contact Hours: 2 x one hour lectures per week over 12 teaching weeks, 1 x two-hour practical class<br>Total Time Commitment: Not available   |
| <b>Prerequisites:</b>                    | None   |
| <b>Corequisites:</b>                     | None   |
| <b>Recommended Background Knowledge:</b> | At least one semester each of University level maths and chemistry are strongly recommended. In addition, at least 25 credits in 2nd year Earth Sciences subjects (preferably geology-focused) or the equivalent are suggested. Students should seek approval from the course coordinator if uncertain whether previous coursework is appropriate.   |
| <b>Non Allowed Subjects:</b>             | Students who have completed 625-307 Hydrogeology are not permitted to enrol in this subject.   |
| <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 field excursions. 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>Contact:</b>                          | Dr. John Moreau, 8344-6518, jmoreau@unimelb.edu.au<br>Dr. Charles Lawrence, 8344-7963, crl@unimelb.edu.au  |
| <b>Subject Overview:</b>                 | In this subject, we will focus on natural groundwater systems, providing students with an introduction to groundwater flow in steady state and transient conditions, groundwater resource development, groundwater recharge processes; groundwater quality and chemistry (including biogeochemical impacts); and the role of stable and radiogenic isotopes in evaluating groundwater flow systems. The material is consolidated through lectures, hands-on exercises and case studies showing the importance of integrating both physical and chemical hydrogeology. A field excursion near the end of the course will allow students to consolidate their learning about the role that groundwater plays in a variety of settings, including; mines, salt and freshwater lakes, municipal wells and mineral springs. |
| <b>Objectives:</b>                       | This course will introduce students to a globally critical issue - the sustainable management and use of groundwater. Students will learn how fundamental data can be used to develop a deeper understanding of groundwater flow systems and chemical evolution. Students will learn how to present results from current research and interpret/analyze data from practical exercises. The field excursion will demonstrate the immediate utility of an understanding of the principles of hydrogeology and hydrogeochemistry for the environment and the community.   |
| <b>Assessment:</b>                       | Ten equally weighted practical exercises (weekly from Weeks 2-12 excluding week of excursion) designed to illustrate / expand upon lecture content (25%); One literature critique of 1000-3000 words length due near the end of semester (10%); a two-day field excursion with accompanying practical exercise (15%); and Problems for each practical exercise will be designed such that they contiguously lead to the development of a semester-long "research project", to be written up as a final 6-8 page scholarly paper (50%).   |
| <b>Prescribed Texts:</b>                 | None   |

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| <b>Recommended Texts:</b>                     | <p>The following books are available in the Earth Sciences library:</p> <p>Fetter C.W., 2001 Applied Hydrogeology. Prentice Hall – postgraduate students going on to further study and/or employment in hydrogeology-related fields should seriously consider purchasing a recent edition of this textbook.</p> <p>Domenico P.A. and Schwartz F.W., 1998. Physical and chemical hydrogeology. J Wiley</p> <p>Drever J.I., 1997 Geochemistry of natural waters. Prentice Hall.</p> <p>Price M., 1996 Introducing groundwater. Chapman and Hall</p> |
| <b>Breadth Options:</b>                       | <p>This subject is not available as a breadth subject.</p>  |
| <b>Fees Information:</b>                      | <p>Subject EFTSL, Level, Discipline &amp; Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a></p>  |
| <b>Generic Skills:</b>                        | <p>On completion of this subject students should gain the following generic skills: critical thinking, applying the scientific method, data analysis/interpretation, public presentation skills.</p>  |
| <b>Links to further information:</b>          | <p><a href="http://www.earthsci.unimelb.edu.au/hydro">http://www.earthsci.unimelb.edu.au/hydro</a></p>  |
| <b>Notes:</b>                                 | <p>Costs: Costs will be levied for fieldwork components. \$40 course reader, \$120 weekend field excursion (covers transportation and lodging).</p>   |
| <b>Related Course(s):</b>                     | <p>Master of Environment<br/>                 Master of Environment<br/>                 Master of Science (Environmental Science)<br/>                 Postgraduate Certificate in Environment<br/>                 Postgraduate Diploma in Environment</p>  |
| <b>Related Majors/Minors/Specialisations:</b> | <p>Conservation, Restoration and Landscape Management<br/>                 Integrated Water Catchment Management<br/>                 Sustainable Forests<br/>                 Waste Management</p>   |