ENGE416X  Engineering Geology Design Projects  
Coordinator: Dr Clark Fenton  
This course covers the principles and processes of landform evolution - tectonic, fluvial, mass movement, coastal, volcanic, glacial erosion and deposition - with application to site selection, field exercises, case studies.

Disaster Risk and Resilience  
DRRE401 S1  Introduction to Disaster Risk & Resilience  
Coordinator: Prof Tim Davies  
DRRE 401 provides essential background concepts for a critical understanding of hazard and disaster risk management situations and practices. The course assumes no specific background and is presented in such a way that students from a wide range of disciplines can benefit from it. It treats hazards and risks in a complex systems context applicable to, for example, natural disasters, business, biosecurity, insurance, health, engineering and recreation.

DRRE402X  Risk Assessment  
Coordinator: Dr Thomas Wilson  
The goal of the course is to provide participants with some fundamental tools for assessing risk and providing solutions to risk management questions. The course is designed to show the complexity of managing risk by introducing participants to diverse and often dynamic factors that influence risk, and training participants in the application of specific techniques to assess and manage risk across a range of conditions.

DRRE403 S2  Disaster Risk and Resilience Investigation  
Coordinator: Dr Thomas Wilson  
Supervised research projects that provide opportunities for students to become involved with real-life hazard management situations; obtain information; analyse problems and synthesise solutions; integrate scientific, societal, legal, institutional, environmental and political considerations; and consult and communicate outcomes. Hazard assessment, vulnerability assessment, disaster management planning and recovery from disaster.

DDRE408 S2  GIS and Disaster Risk and Resilience  
Coordinator: Dr Matthew Hughes  
The DDRE408 course provides background concepts for utilizing Geographic Information Systems in disaster risk and resilience situations and practices. Although the course assumes no background in GIS, it will advance relatively quickly in the second part of the course after students have gained initial familiarity with GIS in the first part.

Environmental Science  
ENVR410 S1  Concepts & Principles of Environmental Science  
Coordinator: Dr Sally Gaw  
Basic concepts and principles in environmental science.

ENVR411 S2  Case Studies in Environmental Science  
Coordinator: Dr Islay Marsden  
Application of basic concepts in environmental science to understanding land, air and water processes, their interactions, and their management.

Contacts  
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A broad-based teaching and research programme is run in our Department and we offer a range of postgraduate degree programmes, including in Geology, Engineering Geology, Disaster Risk and Resilience and Environmental Sciences. We are committed to both the provision and achievement of excellence in postgraduate education. Postgraduate students are offered the opportunity to engage in advanced study and specialisation in a friendly and supportive environment that strives to foster the highest levels of scholarship and research. The main aim of the postgraduate programme in Geology is to prepare students for careers in research or industry by in-depth pursuit of a selected group of topics within geological sciences.

Geology

GEOL473 S1  Structural Geology
Coordinator: Prof Andy Nicol
This course will focus on tectonic and structural aspects of convergent and transpressional plate margins. It will give an overview on subduction zones, collisional orogens as well as oblique convergence. We will be seeking to discover what structural geology can tell us about mountain building processes in such settings, and consider the relationships between deformation and geomorphology, driven by the feedback between tectonics and climate.

GEOL 474 S2  Igneous Petrology and Geochemistry
Coordinator: Dr Alex Nichols
This course will concentrate on the geochemical aspects of igneous petrology. At every stage we will be seeking to discover what magma chemistry can tell us about the nature of igneous processes and the relationships between igneous rocks. Following coverage of “core material” we will discuss particular igneous processes, the petrogenesis of certain rock suites and select some of the “hot topics” in igneous petrology.

GEOL 476X  Physical Volcanology
Coordinator: Dr Ben Kennedy
This course aims to provide students with an understanding of the physical processes that influence volcanic deposits resulting from both effusive and explosive eruptions. Topics range from the magma reservoir and conduit to the final resting place of volcanic deposits and specifically include the physical properties of magmas, dynamics of lava flows and domes, structure and origin of calderas, explosive eruptions, pyroclastic flows and surges, debris avalanches, lahars, submarine volcanism and magmatic hydrothermal/geochemical systems. There is a compulsory field trip for this course run early in February.

GEOL 479 S1  Active Tectonics and Geomorphology
Coordinator: Prof Jarg Pettinga
Active deformation is explored in this course, introducing the criteria by which active deformation can be identified and located. The emphasis is on the interaction between tectonic and other geomorphic processes in shaping the landscape and the way in which the nature of the underlying deformation can be identified and quantified from an analysis of topography.

GEOL 481 S1  Applied Palaeobiology
Coordinator: Dr Catherine Reid
This course covers the application of micro- and macrofossil data in the interpretation of palaeoenvironments through laboratory and field projects; and covers aspects of biogeography, palaeoecology, taphonomy and bias in the fossil record in seminar based classes. An emphasis is placed on New Zealand examples.

GEOL 483 S2  Coal and Environmental Geology
Coordinator: Assoc Prof Travis Horton
The majority of the world's energy comes from fossil fuels. In New Zealand, Australasia and Asia, oil and gas are derived ultimately from coal and coal-bearing strata. Therefore, any exploration of oil and gas must be well founded in a basic understanding of coal geology. The use of coal and other carbon-based energy sources presents many challenges, not only in exploration but also in the downstream environmental effects. Today’s geologists need to understand those consequences and risks.

GEOL 484 S1  Special Topic Petroleum Geoscience
Coordinator: Prof Andy Nicol
This course will provide an opportunity to acquire technical knowledge of and skills for evaluation petroleum systems. The course will include material from geological (structure, tectonics, sedimentary strata and volcanic rocks) and geophysical datasets. It will offer a technical grounding in many aspects of geoscience bearing on the search for, and production of, hydrocarbons. The course will help develop critical data analysis and reasoning skills using practical exercises for outcrop, drillhole and geophysical (e.g., seismic reflection profiles) datasets.

Engineering Geology

ENGE410X  Engineering Geology Field Methods
Coordinator: David Bell
This course focuses on practical field skills, data collection, analysis and the presentation of results from field work. It also introduces generating maps and engineering geologic models using traditional and computing-based methods.

ENGE411X  Engineering Construction Practice
Coordinator: David Bell
This course is concerned with the nature and properties of construction materials for civil projects, general design principles and construction practices in rock and soil, and selected case studies (both historical and current). It also considers appropriate engineering geology practice for various surface and subsurface projects, with emphasis on project failures and the implications for sound geotechnical practice. Knowledge of precedent is fundamental to engineering design and construction, and the course content is inherently practical rather than theoretical.

ENGE412X  Rock Mechanics & Rock Engineering
Coordinator: Dr Marlène Villeneuve
This course focuses on description and representation of a rock mass, stress and strain in a rock mass and deformation and failure of a rock mass. These are applied to rock slope stability analysis and design of underground excavations.

ENGE413 S2  Soil Mechanics and Soil Engineering
Coordinator: Dr Clark Fenton

ENGE414X  Applied Hydrogeology
Coordinator: Dr Marlène Villeneuve
The Applied Hydrogeology course provides postgraduate students in engineering geology and environmental science with a sound understanding of the nature and occurrence of groundwater, various techniques for resource evaluation, contaminant transport issues, and a brief introduction to groundwater modelling. The course is an integrated one, developing both geological aspects of groundwater occurrence and chemistry, as well as pragmatic methods for quantifying flow parameters and aquifer characteristics.

ENGE415X  Engineering Geomorphology & Geohazards
Coordinator: Dr Clark Fenton
This course covers the principles and processes of landform evolution - tectonic, fluvial, mass movement, coastal, volcanic, glacial erosion and deposition; with application to site selection, field exercises, case studies.