

GEOG461 Mountain Hydrology



COURSE DELIVERY

Workshops

One 2 hour workshop each week (in person)

Develop skills in data analysis, hydrological modelling and critical thinking.

Workshops include practical experience running a hydrological model, student-led seminars, and in class discussion.

A survey of mountain and cold climate hydrology, with an emphasis on catchment scale processes, hydrological modelling and analytical techniques.

Course content modules:

1

Hydrological Data Handling

What are water towers and how are these important in mountain hydrology?

Develop professional techniques for handling runoff and rainfall, suspended sediment & chemical weathering data.

2

Hydrological Modelling

Learn how to set up, calibrate and validate a simple hydrological model.

Experiential learning in running forecast impacts of climate change impacts on runoff in a mountain catchment.

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The objective of this paper is to explore different approaches to hydrology: modelling and empirical observations.

Hydrological models are the cornerstone of understanding hydrological exchanges and the outcomes of these models are critical to managing water resources. Models offer the advantage of determining exchanges or processes not readily observable or quantifiable in the field, as well as projecting into the future.

Empirical studies establish baseline measurements and quantify parameters that are needed to feed into numerical models, and can be used to validate model outputs.

This course is structured around these two methodologies in an applied context, to a mountain catchment, as a natural laboratory in which to explore different conceptual problems in hydrology, as well as an awareness of central themes to contemporary hydrological research.



Assessment

Assessment is 100% internal

Learning Outcomes

1. To interrogate climatological influences on catchment hydrology
2. To explore the role of climate change on stream flow
3. To characterise the sensitivity of models to parameterisation
4. To undertake analysis of hydrological data
5. To characterise the effects of future climate change on mountain weathering processes
6. Develop critical reading skills, synthesizing literature and research skills

Study towards jobs in Water Resource Management & Hydrology

Geog461 is designed to advance the core skills used every day by water resource managers, planners and professional hydrologists, both in New Zealand and abroad! Hydrology is a highly valued industry job with post-graduate employment opportunities in local and central government, consultancies and engineering firms, NGOs, and the agriculture sector.