

New Zealand Geology Camp: Understanding the subduction factory from the evolution of the Gondwanaland plate margin to the development of Zealandia

Course code: 233.302E1 and 233.203E1

Course coordinator: Associate Professor Karoly Nemeth

Contact: k.nemeth@massey.ac.nz

Website: http://www.massey.ac.nz/massey/learning/colleges/college-of-sciences/professionaldevelopment/geology-field-camp/geology-field-camp_home.cfm

This course is primarily aimed to attract students in their 2nd or 3rd year of undergraduate study (BSc), but it is also designed to suit advanced level students (MSc and PhD students). The course intends to provide a full overview of the “subduction factory” along the Gondwanaland margin. The Geology Camp will start by introducing the oldest known rocks on the surface of New Zealand, and provide field experience to show how multiple subduction events formed volcanic arcs, back-arc and fore-arc basins along the eastern margin of Gondwanaland from the early Paleozoic era to the Mesozoic. The Field Camp also will provide practical experience on working on rocks that help to understand the sedimentary, metamorphic and volcanic processes responsible for the plate margin processes that occurred in the eastern margin of Gondwanaland. These processes led to a major rifting event in the Mesozoic to early Cenozoic, which drifted New Zealand’s landmass away from Gondwanaland, and formed a new, but predominantly submerged, continent in the Southwest Pacific, called Zealandia. In the later phase of the Camp, the participants will gain experience in the volcanic processes of active volcanoes in the Central North Island of New Zealand and will gain an understanding of **Volcanology, Quaternary Geology, Soil Science** and **Geomorphology** in a rapidly changing landscape. The Field Camp hence will provide a unique opportunity to see repeated subduction and basin closure events and their consequences in the geological record of New Zealand, and how the gradual processes of rift were able to create a new continental landmass, and eventually a new continent. During the Field Camp, students will carry out independent field mapping of various areas of Cenozoic sedimentary basins in the eastern side of the Southern Alps, will be introduced to metamorphic geology in the context of gradual exhumation of metamorphic core complexes along the Alpine Fault, and will see the sedimentary responses to the various stages of subduction events and subsequent rifting. The participants on this course will visit world-class sites, where structural geology, metamorphic geology, sedimentary geology, igneous geology and their associated applied geological subjects can be seen in “action”. Student also will see nature conservation projects relevant to geological sites and gain knowledge on the significance of geological heritage studies. To maximise the learning outcomes of this field-based course, an ideal student should have a genuine interest in the earth sciences and be ready to meet the challenges of this long (4 to 6 weeks) field camp, where they will be exposed to a very complex, but rewarding, geological environment. Ideally students need to have basic earth sciences knowledge to gain the most from the Camp, and we will look out for experience with courses such as Introduction to Earth Sciences, How the Earth Works, Geomorphology, material sciences (Mineralogy, Petrology) and basics on structural geology. Acceptance on the course is NOT linked to definitive and strict formal entry criteria. Every student is evaluated on an individual basis, which also helps to design the program better to fit to the students’ needs and backgrounds.