s1995204

Maximum submission date: 31 August 2023 (at the earliest)

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**EASC08017: Introduction to the Geological Record demonstrator & field demonstrator - Stuart Gilfillan** - The course will teach 3D mapping and cross-section skills, as well as 4D-thinking abilities - areas highlighted by both a recent external Teaching Quality Assurance (TQA) and Industry as being a vital skill. These will be taught via integration of maps with rock identification in a way not previously achieved. The course will also introduce the application of online digital databases (BGS and USGS maps; Digital Elevation Models; radar interferometry; remote sensing; imagery) in solving global geological problems. The course will logically follow the core course Earth Dynamics (Semester 1), and prepare students for mapping fieldwork at the beginning of year 2.

* Assist with practicals during semester 2 - 9 to 11 on Thursday mornings Assist with the marking of 2 assessed practicals Assist with demonstrating duties on the fieldtrip.

1) Master in geology specialised in petroleum geology obtained at the Unilasalle Beauvais School (France). Strong background in sedimentology, structural geology, tectonics, geomorphology, hydrogeology, volcanology, magmatic petrology / petrography, mineralogy, 2D mapping... With the objective to provide the Industry with efficient geologists, our education program has been focused on developing a naturalistic approach in observing and analysing outcrops and geophysical data to understand past processes and evaluate resources potential.

* More than 10 weeks of field work/mapping in sedimentary areas (Britain; Normandy; Cevennes, the Alps, France) and 2 weeks in volcanic areas (Massif Central, France).
* 1-month field work in Sicily as part of my 1-year Bachelor’s research project: mapping and lithostratigraphic/structural analysis of the Salice graben (Messina area) to understand the structural and paleo-geographical evolution of the Messina Strait + 2D cross sections realisation and rock sample analysis.

2) Master in Geology specialised in geothermal energy in Iceland. Development of extensive skills in remote sensing data analysis:

* Surface land classification using LANDSAT-8 images (i.e. Vegetation index calculations)
* Thermal remote sensing using ASTER images (accessed from USGS website) used to map surface geothermal activity in the Krafla area, Iceland (1-month project) - use of ENVI 4.0.
* Radar interferometry, using Sentinel-1 images accessed from ESA Copernicus Hub, to map ground surface deformation at the Reykjanes geothermal field, Iceland (Master thesis, see Receveur et al., 2019) - processing and time series analysis using the ISCE software.

3) 8-month position as a research assistant at the University of Canterbury in New Zealand:

* Acquisition of aerial images along the east coast of the North Island of New Zealand (Castelpoint area) using Phantom-4 drone + 3D modeling of the cliffs/beaches using Agisoft-Photoscan (i.e. point cloud method).
* Interferometric analysis of the displacements caused by the 2016 Kaikoura earthquake (New Zealand) and comparison with topography (DEM processing)

4) Extensive use of GIS tools, such as ArcGIS or QGIS.

**EASC08020 - Global tectonics and Rock Record-2nd year Geology – Demonstrator, Field Demonstrator- Prof. A H F Robertson** - Basic geology, mineralogy, igneous petrology and sedimentologiy

* 2 or 4 tuto / week (30h lab + 14h field trip) - Demonstating practicals + 2-day weekend field trip demonstration – 1 set of dem for W 1-6 (mineralogy/petrology) and 1 set of demonstrators for W 7-10 (sedimentological + field trip). Practicals are duplicated so Monday 3 x demonstrators, Tuesday 2 x demonstrators, Thursday 3 x demonstrators, Friday 2 x demonstrators.

**EASC08016- Physics of the Earth – Demonstrator, Tutor (not including marking) - Mark Naylor -** Experience required in introduction to Seismology, Geomagnetism and Gravity for geophysics. Introduction to Seismology, Geomagnetism and Gravity for geophysics.  
🡪 The person will demonstrate on 3x3hr practicals and tutor for ~8x1hr tutorials

Good background in Geophysics (gravity, magnetism, resistivity, seismic refraction) through extensive courses attended in France and Iceland (double Master degree in Geology) and field work:

* + “Seismology”, “Near-surface geophysics”, “Seismic refraction” and “Signal analysis and processing” coursework (Lasalle Beauvais, France), including gravimetry, magnetics and seismic refraction data acquisition and processing (data inversion to determine the parameters of a shallow aquifer). Good theoretical notions of electromagnetics and mechanical waves, signal processing and signal analysis. With a specialization in petroleum geology, I also gained good knowledge in seismic stratigraphy.
  + “Introduction to Geophysics”, “Geophysical exploration” and “geophysical inversion” coursework (University of Iceland), including a 5-day field trip in South-Iceland aiming to gain insight on the subsurface structure of a valley, using MT-soundings, electro-magnetics, seismic refraction, micro-gravity surveys, and resistivity data acquisition (Schlumberger DC resistivity method), followed by a 1-month group project (signal processing and interpretation). I here gained an extensive understanding on the natural geomagnetic and gravimetric field of the Earth, on the acquisition methods and processing required to correct for external parameters influencing the measurements.