

BCGEOL: A BEGINNER'S GUIDE TO PLANET EARTH

Co-ordinator: Dr Chris Nicholas (nicholyj@tcd.ie)

Semester: Hilary Term

Contact Hours: 3 hours lectures per week (Mon 3-4, Wed 9-10 and 1-2)

Maximum Capacity: 50 students

Module Learning Aims: This module gives an introduction to our dynamic Planet Earth, explains the natural principles and processes which govern how it works inside and out, and retraces its geological history over the past four and a half billion years.

Module Content: From the vastness of space, to the microscopic crystal structure of minerals; from events which take billions of years like galaxy formation, to volcanic eruptions which may last seconds. Geology, or Earth Science, is nothing more nor less than the study of Planet Earth. Geology sets out to investigate the origin and development of the planet, the natural principles that govern it, the processes that act in it, on it, and around it, and finally the life that has evolved with it. Many sciences are conducted in the laboratory, but to a geologist the Earth itself is the laboratory.

The module is divided into two main themes developed consecutively during the Semester. Firstly, 'Earth in Space' investigates the origin of the Universe and our Solar System, how Earth first formed, its composition and structure. We will look at how Earth's internal dynamism constantly changes the landscape upon which we live; building mountains, rifting continents apart, causing earthquakes and triggering volcanic eruptions. The second theme, 'Earth in Time' explores how the planet, and the organisms that have lived on it, evolved together over billions of years by focusing on eight key episodes in Earth's history (without which we wouldn't be here!). Earth is presented on a journey through time, with continents drifting back and forth across the face of the globe, punctuated by events where the planet has diverted the course of evolution and, conversely, when life has changed the physical properties of the planet. We will investigate how evidence of past life can be preserved in rocks, how species evolve and the geological causes which can drive them to extinction. The myriad of different rocks, which together form the building blocks of the island of Ireland, are also pieced together during this journey to highlight key events in the geological history of Ireland.

Learning Outcomes: On successful completion of this module students should be able to explain the basic origin and evolution of planet Earth and outline its dynamics. They should also be able to discuss the major evolutionary episodes in the fossil record and how the planet changed over time with life. Students should also be able to recount a brief geological history of the island of Ireland.

Assessment Details: In course essay (90%) and two in course multiple choice tests (10%).