Module Code: GSU11005
Module Name: Introduction to Geology: A Beginner’s Guide to Planet Earth
ECTS: 10 ECTS
Semester Taught: Semester 2
Module Coordinator/s: Dr Christopher Nicholas (christopher.nicholas@tcd.ie)

Module Content:
This Module is a ‘Beginner’s Guide’ to our dynamic planet, Earth, and the science of Geology. It explains the natural principles and processes which govern how Planet Earth works inside and out, and then retraces its geological history over the past four and a half billion years.

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 only minutes or seconds. Geology, or Earth Science, is the all-encompassing 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 organised into two main themes. Firstly, we will look at ‘Earth In Space’. We live on a dynamic and ever-changing planet, where the surface is constantly being destroyed and renewed. This theme looks at the origin of the Earth, what it’s made of and the processes at work, inside and out, which drive this change. The second theme, ‘Earth In Time’, then focuses on the evolution of the planet over time, and the life that has evolved with it. Earth has been around for just over 4,500 000 000 years, and remarkably, we have evidence that life has existed for at least 3,800 000 000 of those years. There are times in Earth’s history when geological events have changed the course of biological evolution. And, perhaps more intriguingly, there are times when life has changed the way the planet operates. So, this theme of Earth and Life evolving together through geological time is illustrated by looking at eight key episodes in Earth’s history, without which, we simply wouldn’t be here.

Learning Outcomes:
1. Outline the origin and evolution of planet Earth
2. Describe and illustrate the dynamic nature of planet Earth with reference to specific geological processes
3. Describe the origins of life on Earth and list the major evolutionary episodes evident in the fossil record
4. Explain the links between the evolution of life and environmental conditions on planet Earth
5. Outline the geological history of the island of Ireland
6. Make basic geological observations, measurements and interpretations in the field and laboratory.

Recommended Reading: