

# GEOL 20130: Field Geology (Stage 2)

**MODULE COORDINATOR:** Assoc. Prof. Patrick Orr

**CREDITS:** 5

**MODULE LEVEL:** 2

**SEMESTER:** II

## PRE-REQUISITES/PRIOR LEARNING:

A previous level one Earth Sciences or Geology module similar to GEOL 10020 or GEOL 10060 is recommended.

## OVERVIEW OF MODULE:

There are two components to this module.

The first is an introduction to the principal invertebrate groups in the fossil record. This considers their evolutionary biology, their use in environmental interpretations and their identification in hand specimen and thin section. The focus is on materials that are relevant to the geology of Ireland, and that are likely to be encountered in the course of fieldwork.

The second component of the module has been designed to provide you with experience in the collection of primary data in the field and laboratory, its analysis, and interpreting the geological significance of your results. It is therefore lab and field-based. The laboratory and field classes focus on the following:

- (a) the description, identification and geological significance of minerals, igneous, sedimentary and metamorphic rocks in a field context;
- (b) the principles of geological mapping;
- (c) reconstructing the geological history of an area using field evidence;
- (d) elucidating the depositional setting of sedimentary rocks, notably sandstones and conglomerates, using petrography and composition.

The field component comprises a one-day class in Bray, Co. Wicklow, and an intensive six day residential course in the West of Ireland. Materials and data from the localities visited will be used in the practical classes both before and after this field class.

## LEARNING OUTCOMES:

Upon successful completion of the module students will be:

1. familiar with the techniques involved in the description of lithologies in the field;
2. able to identify a range of common minerals, fossils and rocks in hand specimen and in the field;
3. aware of how environments of deposition can be reconstructed;
4. able to deduce the geological history of an area including the relative timing of different events;
5. understand the rudiments of geological mapping and field data collection;
6. able to describe the origin and nature of outcrop-scale field relationships;
7. be able to record structural data (such as dip, strike, plunge and plunge direction) for various geological structures in the field using a clinometer;
8. familiar with the geological record of the principal types of invertebrate fossil.

## ASSESSMENT:

Continuous assessment of field work: 40%  
(*Field sheets, field notebooks etc.*)

Continuous assessment of practical work: 20%  
(*Laboratory notebooks*)

Mid Term Class Test: 20%  
(*Test on aspects of the module relating to paleobiology of the invertebrate groups*)

End of Semester Class Test: 20%  
(*Test on field and practical aspects of module*)