

LF106-12 Environmental field trip for Global Sustainable Development

20/21

Department

Life Sciences

Level

Undergraduate Level 1

Module leader

Isabelle Carre

Credit value

12

Module duration

4 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

LF106-12 Environmental field trip for Global Sustainable Development

[Module web page](#)

Module aims

To develop the practical skills of GSD students.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Determining the pollution status of rivers and streams by sampling populations of freshwater macro-invertebrates, faecal coliforms and antibiotic resistant bacteria

In this practical, students will do the following:

1. Go on a field trip to collect samples from a river that receives effluent from a sewage treatment plant (STP). The samples will consist of: (i) batches of river water; and (ii) groups of freshwater macro-invertebrates collected from the river bed.
2. Evaluate the quality of the water from samples collected above and below the STP using three different methods:
 - a. Identification of macro-invertebrates in the samples using a taxonomic key and counting them into groups, then using this information to compare the biodiversity of macro-invertebrates in relation to their proximity to the STP and to evaluate the amount of organic pollution in the water using a “Biotic Index” scoring system.
 - b. Using a microbiological plating method, determination of whether the STP is a source of faecal coliforms and antibiotic resistant bacteria for the river.
 - c. Measurement of the nitrate and phosphate concentration in the river samples using a chemical assay.

Learning outcomes

By the end of the module, students should be able to:

- Carry out experiments following good laboratory practice in biological techniques.

Indicative reading list

Pruden et al (2006) Antibiotic Resistance Genes as Emerging Contaminants: Studies in Northern Colorado. *Environ. Sci. Technol.* 2006, 40, 7445-7450

Pei et al. (2006) Effect of River Landscape on the sediment concentrations of antibiotics and corresponding antibiotic resistance genes (ARG). *WATER RESEARCH* 40 (2006) 2427–2435.

Goñi-Urriza et al. (2000) Impact of an Urban Effluent on Antibiotic Resistance of Riverine Enterobacteriaceae and Aeromonas spp. *Appl. Environ. Microbiol.* 2000, 66(1):125.

Subject specific skills

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Transferable skills

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Study

Study time

| Type | Required |
|-------------------|------------------------------|
| Lectures | 1 session of 1 hour (1%) |
| Practical classes | 3 sessions of 10 hours (25%) |
| Private study | 89 hours (74%) |
| Total | 120 hours |

Private study description

Inclusive of a 3 day practical class.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A1

| | Weighting | Study time | Eligible for self-certification |
|----------------------|-----------|------------|---------------------------------|
| Assessment component | | | |
| Report | 100% | | Yes (extension) |

Reassessment component is the same

Feedback on assessment

Annotated copies of the work and feedback comments will be provided via Moodle.

Availability

Courses

This module is Optional for:

- Year 2 of UIPA-C1L8 Undergraduate Life Sciences and Global Sustainable Development