

BS215-6 Biological Sciences

Laboratories & Assessed Work for GSD Students

20/21

Department

Life Sciences

Level

Undergraduate Level 2

Module leader

Philip Young

Credit value

6

Module duration

4 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

To develop the practical skills of GSD students.

[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:

- On completing this module, students will 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

Understand key concepts in molecular biology and biochemistry.

Prepare and deliver a brief oral presentation to a small group with appropriate selection of material

Appreciate the essence of scientific poster design and implement this in a group context

Understand the key elements of a successful scientific essay and apply these in an extended piece of work

Transferable skills

Group work, self directed learning, team work

Study

Study time

Type	Required
Lectures	1 session of 1 hour (2%)
Practical classes	3 sessions of 6 hours (30%)
Private study	41 hours (68%)
Total	60 hours

Private study description

Self directed learning and preparation for lab classes.

Costs

No further costs have been identified for this module.

Assessment

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

Students can register for this module without taking any assessment.

Assessment group A1

	Weighting	Study time
Report	100%	

Feedback on assessment

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

Availability

Courses

This module is Optional for:

- Year 2 of UIPA-C1L8 Undergraduate Life Sciences and Global Sustainable Development
- CL18