Environmental Science

For new specifications AQA

Programme Description

Students will have an opportunity to develop an understanding of a range of methodologies and sampling techniques. These will be carried out within an environmental context enabling students to gain first hand experiences. Students will also consider the purpose and application of each method as well as the limitations. Risk management of the fieldwork including how to safely and correctly use a range of practical equipment will also be included throughout the day.

Learning Opportunities

During this fieldwork experience students will:

- Carry out random sampling techniques within 2 woodland types.
- Carry out systematic sampling along a transect.
- Have the opportunity to use 3 types of quadrat (open frame, grid and point).
- Build an appreciation of the potential risks during fieldwork and how these might be managed.
- Measure abiotic factors (Light intensity/temperature/pH).
- Carry out a range of fieldwork techniques, both qualitative and quantitative.
- Carry out quantitative/comparative/numerical measures e.g. abundance scales, species richness and diversity, percentage cover, Simpsons Index of Biodiversity.
- Consider the limitations of the fieldwork skills carried out.
- Consider the environmental impacts of their fieldwork and how this can be minimised.

Programme

Course Outline

AM

Aim: To study the differences between a broadleaf woodland ecosystem and a coniferous woodland ecosystem.

Introduction: Background on woodland management strategies and types.

Woodland 1

- Random sampling of ground flora with gridded/open quadrats.
- Field identification of ground flora using dichotomous keys.
- Measuring of abiotic factors.

Woodland 2

- Repeat of fieldwork above.

Follow up:

Analysis of data using Simpsons Diversity Index.

Comparison of data using mean, median and mode (as appropriate to the data).

Summary, conclusion and limitations.
PM

Aim: To carry out systematic sampling using a transect to investigate the correlation between 2 variables.

Introduction: Systematic sampling and use of transects.

- Systematic sampling along a transect using point frame quadrats.
- Field identification of ground flora using dichotomous keys.
- Measuring of abiotic factors along a transect.

Follow up:
Analysis of data using scattergraphs.
Summary, conclusion and limitations.

Post Course
Data could be used for further analysis and statistical testing.

Links to Specification

3.3 Research Methods
   3.3.1 Scientific methodologies
   3.3.2 Sampling techniques
      3.3.2.1 Standard environmental techniques
      3.3.2.2 Fieldwork and Laboratory Skills
   3.3.3. Opportunities for skill development and independent thinking
       MS 0.3, MS 1.2, MS 1.3, MS 1.4, MS 1.5, MS 1.6 & 1.10 MS 1.7, MS 2.3

6.1 Practical Skills for assessment
   6.1.2 Use and application of scientific methods and practices
   6.1.3 Numeracy and the application of mathematical concepts in a practical concept
   6.1.4 Instruments and equipment

6.2 Required practical activities.
6.3 Methodologies
   6.3.1 Planning for representative data – Me 1, Me 2, Me 3
6.4 Sampling techniques ST1 & ST2
6.5.4 Undertake experimental and investigation activities, including appropriate risk management, in a range of environmental contexts

7.1 Arithmetic and Numerical Computation MS 0.2
7.2 Data Handling MS 1.1, MS 1.5, MS 1.6, MS 1.7
7.3 Algebra MS 2
Recommended Course Length

We recommend this course begins at 9.30 and finishes at 16.00, for a 6.5 hour day.

Cost

£25 per student per day.

What is included in the fee?

- Up to 6 hours of tuition, longer days can be arranged on request
- Expert tuition, from fully trained staff
- Use of facilities including workrooms, ICT and centre grounds
- Established health and safety procedures. All education staff are first aid trained & DBS checked
- Access to specialist equipment and resources
- Support before and following the course
- Permissions and agreements to use field site from the landowners

Tuition is delivered by talented teachers, with not only an expert knowledge of their subject and field work locations, but a passion for the subject being taught. Our education team are DBS checked, and undergo a regular and rigorous training process. All tutors have received training in first aid, risk assessment and water safety.

Course options This programme is designed to meet the requirements of your specification. If this programme doesn’t meet your needs, or you would like to make adjustments to one of our standard programmes, please contact us to discuss what we can offer you to suit your requirements.

External Recognition of Quality

All of our learning locations have been awarded the Quality Badge by The Council for Learning Outside the Classroom. The badge is awarded to organisations that have demonstrated that they consistently deliver high quality teaching and learning experiences and manage risk effectively.

This means that you will have to complete less paperwork when visiting our centre.
Further Information for the Fieldwork Day:

Timings & Transport

Arrive at Bishops Wood for 9.15 for a 9.30 start.

Finish at 16.30 (please just let us know if you wish to change the timings).

There is space at Bishops Wood for both coach and minibus parking.

Lunch

Students will need to bring a packed lunch and drinks for during the day.

Hot drinks will provided at lunch time if required.

Students will need:

Wellington boots (or walking boot type shoes).

Long trousers (due to risk of tick bites, brambles and nettles).

Pens, pencils, calculators, erasers & paper for taking notes and collecting data.
Cameras for taking photographic evidence.

Waterproofs, if wet weather is forecast.

**We will provide:**

All of the field equipment & field handouts.

Clipboards.