



## FSC Outdoor Classroom for Scotland Higher Programmes

*FSC programmes are fixed length courses with clearly stated outcomes and links to SQA National Unit Specifications.*

### Managing Environmental Resources Investigating Ecosystems 3 days

Please visit  
<http://www.field-studies-council.org/outdoorclassroom/higher>  
for alternative Higher programmes

## OVERVIEW

This three day course focuses on Unit 2 *Investigating Ecosystems* of the National Unit Specification. During the course all students will benefit from expert tuition in a beautiful highland setting, while experiencing *firsthand* the concepts, principles and issues surrounding managing environmental resources.

This is a short course that packs a lot of fieldwork into a limited amount of time. Students will leave with a greater understanding of Scottish natural ecosystems and associated dynamics; along with their firsthand experience and primary data that can be processed further back at school.

## PROGRAMME LENGTH

3 Days (2 nights with 6 teaching sessions)

Start days: Monday, Wednesday or Friday

Groups would normally arrive in time to be taught in the afternoon of the first day and would then be taught on that evening and for one full day subsequently. Groups depart immediately after the morning session on the day of departure.

Day 1	Day 2	Day 3
Arrive  Afternoon & evening sessions	Morning, afternoon & evening sessions	Morning session  Depart after Lunch

## PROGRAMME CONTENT

- Investigations into woodland/moorland/freshwater (school choice) ecosystems and dynamics – habitat, niche, biodiversity, biomass,
- Looking at factors affecting frequency and distribution of species - abiotic/biotic factors, adaptation and competition
- Biological sampling methods and fieldwork techniques
- Using complex keys for accurate identification of plants, vertebrates and invertebrates
- Data collection using a range of fieldwork techniques
- Analysis, presentation and interpretation of data

### ***NATIONAL UNIT SPECIFICATION LINKS:***

This course focuses on Unit 2 Investigating Ecosystems in the National Unit Specification. The approach is investigative using fieldwork techniques to observe, measure and record the physical and biological elements of the ecosystem under study, and their interrelationships. Students will take back with them all the necessary information and data required to compile a report of a field investigation they have taken part in (design and delivery).

#### **Higher**

##### ***Unit 2 Investigating Ecosystems***

- 1 Ecosystems, habitats and communities
- 3 Dynamics of ecosystems – effects of abiotic and biotic factors

**EXEMPLAR TIMETABLE**

DAY	MORNING	AFTERNOON	EVENING
1	<p><b>Arrival</b> (approx. 12 - 1pm)</p> <p><b>Welcome and outline the challenges ahead</b>                      Tour of centre                      Settle into rooms                      Allocate kit (i.e. waterproofs)</p> <p><b>Introduction to Fieldwork</b>                      Brief introductory discussion to explore:</p> <ul style="list-style-type: none"> <li>• The importance of firsthand experience</li> <li>• Biological sampling methods and techniques</li> <li>• Aims of the course</li> </ul>	<p><b>Woodland Ecosystems</b>                      Students undertake a coniferous and deciduous ecosystem investigation to:</p> <ul style="list-style-type: none"> <li>• Study two contrasting woodland ecosystems</li> <li>• Use identification keys and focus on diversity and abundance of woodland soil/leaf litter invertebrates and propose hypotheses</li> <li>• Use appropriate biotic and abiotic sampling methods</li> <li>• Measure and investigate leaf litter and soil, soil pH, moisture, light intensity and humidity</li> </ul>	<p><b>Follow up session</b>                      Using data gathered during the fieldwork investigation students will:</p> <ul style="list-style-type: none"> <li>• Provide graphical analysis of their results</li> <li>• Discuss the methodology used and its limitations</li> </ul>
2	<p><b>River ecosystem study</b>                      Students undertake river investigation to:</p> <ul style="list-style-type: none"> <li>• Identify components affecting the river ecosystem</li> <li>• Collect data using appropriate sampling techniques for both biotic and abiotic factors</li> <li>• Identify freshwater species – plants and animals</li> <li>• Measure pH and Oxygen saturation levels along with river velocity</li> <li>• Identify pollution sources</li> </ul>	<p><b>Follow up session</b>                      Use microscopes and keys to identify species</p> <ul style="list-style-type: none"> <li>• Identify ways in which organic pollution can affect the distribution of organisms and compare the ways in which organisms are adapted to survival in freshwater environments</li> <li>• Identify sources of error in data collection</li> </ul>	<p><b>Animal trapping</b>                      Students will set Longworth and pitfall traps in order to trap and study small invertebrate and mammal species of the area to:</p> <ul style="list-style-type: none"> <li>• Identify species</li> <li>• Discuss feeding and habitat needs</li> <li>• Discuss the use of traps</li> </ul>
3	<p><b>Food Chains and Webs</b>                      Revision session of the concepts, followed by fieldwork to investigate woodland leaf community to:</p> <ul style="list-style-type: none"> <li>• Identify producers, consumers, and decomposers in ecosystems</li> <li>• Illustrate trophic levels and biomass &amp; pyramids of numbers</li> <li>• Identify species using identification keys.</li> <li>• Introduce concepts of symbiosis, mutualism and parasitism</li> </ul>	<p><b>Lunch and Depart</b></p>	

**Please note:** to ensure safe and quality learning experiences for students the timetable may alter depending on weather conditions and local factors at centres.

### **FSC KINDROGAN**

Located in rural Perthshire, at the edge of the Cairngorms National Park FSC Kindrogan is 11 miles from Pitlochry's mainline train station and close to the A9. The Centre itself is set in wooded grounds on the banks of the River Ardle and lies within easy reach of some of the most inspiring landforms in the Scottish Highlands and a rich range of wildlife habitats.



KD

Kindrogan

Tel: 01250 870150

### **TO BOOK THIS PROGRAMME, SIMPLY:**

1. Choose the time of the year you would like to attend
2. Check availability online or contact FSC Kindrogan

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**The FSC prides itself on being flexible. If you can't find a programme to meet your exact requirements a course specifically tailored to meet your needs can be developed. To discuss this, contact the centre of your choice. Fees will depend on what time of year you would like to visit and your length of stay but will be more expensive than FSC programmes at peak periods.**