



## FSC Outdoor Classroom for Scotland Intermediate 1 and 2 Programmes

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

### Managing Environmental Resources Investigating Ecosystems, Land Use and the Local Environment 5 days

Keen to use real world learning to create **engaged** students?

Want to promote **teamwork** and social skills?

Interested in effectively **challenging** gifted and talented students?

Aim to make A Curriculum for Excellence fun through **memorable** experiences?

Seek **inclusive** experiences that appeal to a range of learners?

Please visit

<http://www.field-studies-council.org/outdoorclassroom/scotland>

for alternative Intermediate 1 and 2 programmes

## OVERVIEW

This five day course focuses on elements of the *Ecosystem* unit and the *Land Use* (Intermediate 1) and '*Local Environment* (Intermediate 2) units 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 and issues associated with 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 awareness of the ecosystems and landscapes of the Scottish Highlands, and practical skills in critical investigation and the conservation of ecosystems.

## PROGRAMME LENGTH

5 Days (4 nights with 12 teaching sessions)

*Monday-Friday, Wednesday-Sunday*

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 three and a half days subsequently. Groups depart immediately after the morning session on the day of departure.

Day 1	Day 2	Day 3	Day 4	Day 5
Arrive  Afternoon & evening sessions	Morning, afternoon & evening sessions	Morning, afternoon & evening sessions	Morning, afternoon & evening sessions	Morning session  Depart after Lunch

## PROGRAMME CONTENT

### Intermediate 1

- Investigations into ecosystems - abiotic and biotic factors; energy dynamics and food webs
- Investigations into land use and associated issues- upland and high mountains- skiing/tourism/conservation
- Biological sampling methods, fieldwork techniques and using identification keys
- Data collection - using a range of mapping and fieldwork techniques
- Analysis, presentation and interpretation of data

### Intermediate 2

- Investigations into ecosystems – frequency and distribution of species; comparison between contrasting terrestrial/freshwater habitats and species
- Investigations into the local environment and associated issues – upland glaciated river valley – features, flora and fauna, land use conflicts, co-operation and integration issues
- Biological sampling methods, fieldwork techniques and using identification keys
- Data collection, analysis, presentation and interpretation of data
- Personal, interpersonal, and organizational skills

## NATIONAL UNIT SPECIFICATION LINKS:

This course focuses on Unit 2 *Ecosystems* in the National Unit Specification, as well as the *Land Use* (Intermediate 1) and *Local Environment* (Intermediate 2) units.

The approach is investigative - using fieldwork techniques to observe, measure and record the various elements contributing to the local ecosystems and landscapes 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).

The difference between levels, Intermediate 1 and 2 is more in the breadth of content covered and expectation of student capacity, rather than in the activities themselves. This can allow for mixed level groups to attend the same course. **To discuss bringing a mixed level group, please contact the Centre directly.**

### Intermediate 1

#### **Unit 2 Ecosystems**

- 1 Inter-relationships of an ecosystem
- 2 The physical components of an ecosystem
- 3 The biological components of an ecosystem

#### **Unit 3 Land Use**

- 1 Principal features of local land and water use
- 2 Requirements of a local land, or water-based industry

### Intermediate 2

#### **Unit 2 Ecosystems**

- 1 Ecological concepts
- 2 Food chains and food webs
- 5 The frequency and distribution of plant and animal species in relation to environmental variables
- 6 Impact of human activities on ecosystem
- 7 Pollution and Conservation

#### **Unit 3 Local Environment**

- 1 Features of the local area
- 2 Development of the local area
- 3 Flora and Fauna
- 4 Local land use
- 5 Conflicts of interest
- 6 Integration and co-operation

## EXEMPLAR TIMETABLE

DAY	MORNING	AFTERNOON	EVENING
1	<p>Arrival (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> Introductory discussion to explore:</p> <ul style="list-style-type: none"> <li>• The importance of firsthand experience</li> <li>• Resources available for investigation</li> <li>• Aims of the course</li> </ul>	<p><b>Transect study</b> Students undertake a guided investigation of a transect across a woodland/grassland margin to:</p> <ul style="list-style-type: none"> <li>• Investigate a variety of sampling techniques – transects, quadrats, beating/nets</li> <li>• Use measuring equipment – light, pH, temperature, soil moisture</li> <li>• Use keys to identify plants and animals</li> <li>• Discuss the presentation and analysis of their data and draw conclusions</li> </ul>	<p><b>Reward Session: Small Mammal 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 and discuss the ecology of local species</li> </ul>
2	<p><b>River Ecosystems</b> Students undertake river investigation to: Identify components affecting the river ecosystem</p> <ul style="list-style-type: none"> <li>• Introduce concepts of freshwater ecology</li> <li>• Identify pollution sources</li> <li>• Collect data uses appropriate sampling techniques for both biotic and abiotic factors</li> <li>• Identify water invertebrates using keys</li> <li>• Measure pH and oxygen saturation levels along with river velocity</li> </ul>	<p><b>Follow up session</b> Use microscopes and keys to identify invertebrates and adaptations to living in water/feeding</p> <ul style="list-style-type: none"> <li>• Identify ways in which organic pollution can affect the distribution of organisms</li> <li>• Identify sources of error in data collection</li> </ul>	<p><b>Reward Session: Food Chains</b> Students will design and build own activity to demonstrate food chain/web relationships and energy flow to:</p> <ul style="list-style-type: none"> <li>• Reinforce learning about energy flow and interrelationships in an ecosystem</li> <li>• Improve their team and communication skills</li> </ul>
3	<p><b>Woodland Ecosystems</b> Students undertake a coniferous and deciduous ecosystem investigation to:</p> <ul style="list-style-type: none"> <li>• Discuss woodland ecosystems and identify those that may be found in Scotland</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, , soil pH, moisture, light intensity and humidity</li> <li>• Introduce concepts of land management and potential conflicts along the river Ardlie</li> </ul>	<p><b>Follow up session</b> Using data gathered during the morning 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>	<p><b>Reward Session: Nightwatchers</b> Students take part in a night time sensory experience to discover nocturnal life in the centre grounds.</p>
4	<p><b>Strathardle Investigation</b> Student undertake an investigation to:</p> <ul style="list-style-type: none"> <li>• Examine local geology, soils and Land Capability maps</li> <li>• Observe and record land use of Upper Strathardle (&amp; Glen Brerachan)</li> <li>• Discuss the requirements and factors influencing past &amp; present management</li> <li>• Carry out species identification and soil pH/depth testing along a cross valley transect</li> <li>• Compare biodiversity of improved and unimproved grassland</li> </ul>	<p><b>Follow up session</b> Using data collected in the field students will:</p> <ul style="list-style-type: none"> <li>• Produce a completed annotated land use map</li> <li>• Draw up cross section and tabulate their results &amp; for each land use the key requirements, and factors influencing present management</li> <li>• Provide statistical and/or graphical analysis of their grassland results, including Simpson's diversity index</li> </ul>	<p><b>Presentations</b> Students will work in small groups to prepare and deliver a short presentation for their peers on their experiences during their visit.</p> <p><b>Moth Trapping</b></p> <ul style="list-style-type: none"> <li>• Identify (and then release) moths caught</li> </ul>

## FSC Outdoor Classroom for Scotland

Intermediate 1 and 2 Programmes: *Managing Environmental Resources*, 5 days



5	Ropes and Zip Line Students take part in a series of ropes challenges to: <ul style="list-style-type: none"><li>• Improve their communication skills</li><li>• Undertake a personal challenge</li></ul>	Lunch and Depart	
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**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.**