



FSC Outdoor Classroom for Scotland Intermediate 2 Programmes

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

Biology:
Ecosystems in Action
3 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/intermediate1and2biology.aspx>
for alternative intermediate 1 and 2 programmes

OVERVIEW

This three day programme focuses on the *Environmental Biology and Genetics* unit, and the section on Ecosystems in particular, of the Arrangement Specification. During the course all students will benefit from expert tuition in a beautiful highland setting while experiencing *real* biological situations first hand.

This is a short course that packs a lot of biology into a limited amount of time. Students will leave with a greater awareness of the role of fieldwork in increasing their understanding of concepts covered in the classroom, and improved investigative skills.

Reward Sessions are included in some evening activities to help encourage and motivate students during the course.

PROGRAMME LENGTH

3 Days (2 nights with 6 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 full days 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

Includes:

- Investigations into freshwater ecosystems and dynamics – energy flow, food chains and food webs
- Looking at factors affecting biodiversity
- Biological sampling methods and fieldwork techniques
- Data collection using a range of fieldwork techniques
- Analysis, presentation and interpretation of data
- Reward activities including a choice of ropes challenge, orienteering, team building and problem solving.

ARRANGEMENT LINKS:

Unit 2: Environmental Biology and Genetics

a) Ecosystems

- 1 Energy Flow
 - i) Components of an Ecosystem
 - ii) Food chains and food webs- roles of producers, consumers and decomposers

- 2 Factors affecting the variety of species in an ecosystem
 - i) The importance of biodiversity at species level
 - ii) Factors affecting biodiversity

TIMETABLE

DAY	MORNING	AFTERNOON	EVENING
1	<p>Arrival (approx. 12 - 1pm)</p> <p>Welcome and outline the challenges ahead</p> <ul style="list-style-type: none"> • Tour of centre • Settle into rooms • Allocate kit (i.e. waterproofs) <p>Introduction to Fieldwork Brief introductory discussion to explore:</p> <ul style="list-style-type: none"> • The importance of fieldwork in biology • Biological sampling methods and techniques • Aims of the three day course 	<p>Pond ecosystem study Students undertake a guided investigation of the pond to:</p> <ul style="list-style-type: none"> • Practice freshwater sampling techniques • Identify the components affecting the pond ecosystem • Use keys to identify freshwater invertebrates • Discuss ways organisms are adapted to survival in a pond. 	<p>Reward Session: Small Mammal trapping Students will set Longworth traps in order to trap and study small mammal species of the area to:</p> <ul style="list-style-type: none"> • Identify and discuss the ecology of each species • Discuss the control of mammal population through competition for discourse
2	<p>River ecosystem study Students undertake river investigation to:</p> <ul style="list-style-type: none"> • Identify components affecting the river ecosystem • Identify pollution sources • Collect data uses appropriate sampling techniques for both biotic and abiotic factors • Identify freshwater species – plants and animals • Measure pH and Oxygen saturation levels along with river velocity 	<p>Follow up session</p> <ul style="list-style-type: none"> • Use microscopes and keys to identify species • 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 (river & pond) environments • Identify sources of error in data collection 	<p>Reward Session: Egg Challenge! Team building challenge where students design a contraption to protect a raw egg from certain destruction. Challenge aims to</p> <ul style="list-style-type: none"> • Help learning about an effective design process • Improve their team and communication skills
3	<p>Food Chains and Webs Revision session of the concepts, followed by fieldwork to investigate woodland leaf community to:</p> <ul style="list-style-type: none"> • Identify producers, consumers, and decomposers in ecosystems • Illustrate trophic levels and pyramids of numbers • Identify species using identification keys. 	Lunch and Depart	

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.