



International Baccalaureate Biology

At Orielton Field Centre we are proud of our options for IB which we feel match the learning needs of students. The options listed here are popular with our current groups and are designed to meet the requirements of your specification. However, if your requirements are not catered for in the suggested Orielton Programme outlines below please contact us to discuss possible alternatives; we can flexibly alter a course to suit your individual needs.

Orielton Field Centre
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Freshwater West sand dunes

Please visit
<http://www.field-studies-council.org/orielton/>
for alternative KS2, KS3, GCSE and A-level options

At Orielton you can opt for either a flexible or recommended course. These courses all aim to prepare students for or revise the Topics 1 (statistical analysis), 5 (Ecology & Evolution), and Option G (Ecology & Conservation) whilst facilitating students' work towards their Internally Assessed work portfolio. Here we have outlined our most popular fieldwork investigations for our flexible courses. Please contact us to discuss how we can tailor a course to meet your specific requirements or if you have students wishing to cover more than one subject area (eg. geography and biology).

Content of Modules	Notes	Possible Half Day
<p>Freshwater Ecology Students will undertake a fieldwork investigation to examine how abiotic factors, such as water velocity, temperature, oxygen and point source pollution, affect invertebrate distribution (G.1.2/ G.1.3). Abundance of invertebrates will be quantified using kick sampling and abiotic data factors will be measured. Organisms will be identified in the field, using dichotomous keys, and classified using the five kingdoms system to Family level (5.5.1/5.5.2/5.5.4/ 5.5.5).</p> <p>Data will be collated and analysed using biological indicator species, biotic indices and diversity Indices and results discussed in light of the ecology of species present (1.1.1 /1.1.6). This will be the basis for a discussion on the different ways in which organisms gain energy i.e. autotrophy and heterotrophy, and the modes of nutrition of heterotrophs (consumers, detritivores and saprotrophs) (5.1.2/5.1.3/5.1.9/G.2.1). The role of different organisms in energy transfer and nutrient recycling will also be discussed (5.1.13/5.1.14/G.2.3).</p> <p>Pyramids, food chains and webs will be constructed / considered as methods of displaying energy flow through trophic levels within ecosystems, including the construction of a food chain from the data collected (5.1.4 to 5.1.8/5.1.12/G.2.5). This will also include the concept that pyramids can be generated from different data, i.e. biomass, and methods for the measurement of this data will be given (G.1.9/G.1.10). The efficiency of energy transfer through an ecosystem will be demonstrated (5.1.10/5.1.11/G.2.4).</p>	<p>Links to: Topic 5.1, 5.5, G1, G2</p> <p>Field site(s): Stembridge Stream, Orielton Estate</p>	<p>Yes (without pollution study and a reduced number of sites)</p>
<p>Woodland Ecology Students will undertake a walk and talk exercise through Orielton's extensive woodland, learning about conservation, management techniques and biodiversity. They will also complete some or all of a series of mini-investigations to highlight different sampling techniques. (G.3.4-6/G.4.4/G.5.1-3)</p> <p>Investigation 1: The use of belt transects to investigate the zonation of Bryophytes on Beech trees (5.5.2/5.5.3/G.1.4). This will include the use of keys to identify species and data collection using quadrats (5.5.1-3/G.1.3). Discussion of niche and interaction between organisms, including competition (G.14-6). The effects of biotic and abiotic factors in determining numbers and distribution of plant species in a habitat will be considered, e.g. temperature, water, light, soil and mineral nutrients (G.1.1 / G.1.5/G.1.6). Students will present the data collected using graphical techniques.</p> <p>Investigation 2: Random sampling and percentage cover measurements using quadrats to compare the distribution of Lichens on two species of tree, Sycamore and Willow (G.1.3). Interaction between different species, including types of symbiosis will be discussed (G.1.6). Analysis of data using graphical techniques and standard deviation (1.1.2-4).</p>	<p>Links to: Topic 1, 5.1, 5.5, G1</p> <p>Field site(s): Orielton Estate</p>	<p>Yes</p>

Content of Modules continued	Notes	Possible Half Day
<p>Individual Investigations Students will implement and revise their plans, to collect valid and reliable data. On return to the centre, students will be supported through handling and analysis of their data. Data interpretation and evaluation of methodology, data & evidence, including sources of error, may be carried out during the evening session.</p>	<p>Links to: Topic 1 and others, depending on choice of study. Rocky shores or sand dunes are most common areas of study</p>	No
<p>Sand Dune Succession An investigation of primary succession of plant communities (Pioneer to climax) across a developing dune system (G.2.6). Collection of biotic data via random sampling, using point quadrats, to assess the distribution of plant communities in relation to soil and other environmental factors (G.1.1 /G.1.3/G.1.5/G.1.7).</p> <p>Students will interpret biotic and abiotic data using spreadsheets and statistical analysis to explain the effects of living organisms on the abiotic environment during primary succession (including soil development, organic matter) and trampling effects (G.2.8). Simpson diversity index will be calculated (G.3.1) and the data analysed in the context of succession (G.2.7/G.3.2).</p> <p>Discussion of the role of active management and conservation at Broomhill Burrows (G.4.3), including the impact of being inside the National Park (G.4.4).</p>	<p>Links to: Topic G1, G2, G3, G4</p> <p>Field site(s): Freshwater West</p>	Yes
<p>Management, Conservation and Global Warming A visit to coastal area of a National Nature Reserve to look at the impact of human activity on the landscape and examples of terrestrial and aquatic conservation areas (G.4.5). Management and conservation issues and strategies will be discussed during a walk through this stunning landscape. Students will see evidence of management practices and their effect on succession in exclusion plots across the area (G.2.6) and the ongoing conflict between the National Park’s visitors and the rare and important species and habitats in the area.</p> <p>In the evening a mapping exercise of the conservation case-study will allow students to keep a record of the information gained. Also a decision making exercise</p>	<p>Links to: Topic G2, G4</p> <p>Field site(s): Stackpole Estate, NNR</p>	Yes

Content of Modules continued	Notes	Possible Half Day
<p>Rocky Shore Ecology</p> <p>Students will carry out an investigation to identify organisms using a dichotomous key which uses simple external features for recognition (5.5.3). A belt transect and frame quadrats will be used to assess abundance of animals and algae using an ESACFOR scale (G.1.4). Data will be collected and displayed graphically using kite histograms. Then will be analysed using either Chi² association analysis or Student's t-test. (1.1.2 -5). The results will be the basis for discussion of key ecological concepts e.g. niche, competition and adaptations to both biotic and abiotic conditions considered (5.1.1/G.1.5).</p>	<p>Links to: Topic 1, G1, G2, G3</p> <p>Field site(s): Sawdern Point</p>	No

Content of other (Evening and short) sessions	Notes
<p>Introduction to Ecology and Sampling techniques</p> <p>Often used as a first evening introductory session. This allows students to get a sense of place, and understanding of expectations for the course. An introduction to the area, ecology definitions and sampling techniques will all be covered (5.1.1-4/5.5.1/2/5/G.1.3-8)</p>	<p>Links to: Topic G5, 5.1</p> <p>Field site(s): Orielson Estate</p>
<p>Climate Change and Dendrochronology</p> <p>Using samples from felled trees, students will investigate the link between tree ring growth and climate, in order to better understand biological indicators of climate change.</p>	<p>Links to: Topic 5</p> <p>Field site (s): Orielson Estate</p>
<p>Population Dynamics of the Holly Leaf Miner</p> <p>Students will collect and analyse leaves containing a population of Holly Leaf Miner (<i>Phytomyza ilicis</i>). They will identify mortality factors and calculate the population survival rate (5.3.1). This will lead to a discussion of limiting factors, carrying capacity and predator prey relationships (5.3.4/ G.1.6). Different growth curves will be examined (5.3.2/ 5.3.3) and discussed in the context of pest control methods (G.3.6/ G.3.7). This discussion will include the use of chemical, biological control and farming practices in managing populations.</p>	<p>Links to: Topic 5.1, 5.3, G1, G3, G5</p> <p>Field site (s): Orielson Estate</p>
<p>Lincoln Index Population Study</p> <p>Students will collect data for, carry out and evaluate a simple population estimate of mobile organisms, using the Lincoln Index (G.3.1/G.5.3)</p>	<p>Links to: Topic G5</p> <p>Field site(s): Orielson estate</p>
<p>Salt Marsh Succession</p> <p>Students will collect data using belt transect on species abundance and diversity to investigate the effect of salinity on plant communities (G.1.1/G.1.4). They will also determine the profile of the salt marsh and think about the conservation impacts of urbanisation and development.</p>	<p>Links to: Topic G1</p> <p>Field site(s): Bentlass Salt Marsh</p>

Our Tutors

All our staff complete a rigorous training process; including first aid, health and safety sessions, group management in the outdoor classroom, site specific training relating subject knowledge to our outdoor environments and curriculum content.

About the Centre

An impressive Georgian mansion with over 100 acres of mixed woodland, Orielton is located just three miles from Pembroke on the Castlemartin Peninsula and approximately 1.5 miles from the Pembrokeshire National Park boundary, Britain's only genuine coastal National Park. The proximity to the coast provides a vast array of habitats, landscapes and settlements that are used to form the basis of many of Orielton's activities

What is included within the fee?

- Up to 10 hours of tuition a day
- Expert tuition by fully trained staff
- Full board accommodation including a cooked breakfast, packed lunch, homemade cakes and an evening meal
- Vegetarian and other dietary options are available
- Use of resources including library, classrooms and soils lab and the Centre grounds
- Rigorous and proven health and safety procedures including 24 hour emergency cover
- Access to risk assessments on website
- Specialist equipment and exclusive access to specially developed resources
- E-mail support before and after the course (on request)

Please remember travel to the field centre and to fieldwork sites is not included in the programme fee.

What to Bring

- (Old) Warm clothes - we may get muddy and wet.
- Waterproof top, trousers and wellies (can be hired from the centre), a comfortable day sack, gloves, woolly hat / sunscreen
- Note paper, calculator, stationery and a lunch box.

Directions to the Centre



Directions:

By car: From Pembroke take the B4319 to Angle / Chevron / Hundleton. Continue along this road for approximately 1 mile and turn right onto B4320. Continue through the village of **Maidenwells**, bear sharply right as you leave the village, signposted **Hundleton**. After approximately ¾ mile a white sign on the left indicates the entrance to Orielton is 100 yards ahead. Please proceed with caution along the drive to the main house, maximum speed 20 mph, taking care over the speed bumps.

By train: The nearest train station is Pembroke, please inform the centre to arrange transport from the station to Orielton

FSC Orielton Field Centre, Orielton, Pembroke, Pembrokeshire, SA71 5EZ

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To book a course, simply:

1. Choose the time of the year you would like to attend
2. Contact us at Orielton by e-mail at enquiries.or@field-studies-council.org or by phone 01646 623920 to check availability and prices.

Why Come to FSC Orielton?

Some of the most common reasons which our customers give for coming to our popular Field Centre are:

- The centre's stunning location in rural South Pembrokeshire, just outside Britain's only coastal National Park
- We are easily accessible off the M4 and Pembroke train station is only 10 minutes away
- Expert and specialised tuition from experienced and passionate tutors
- A friendly, welcoming place with home cooked meals and clean, comfortable accommodation
- An unique blend of coastal and inland habitats, stunning landscapes and scientifically important habitats



The Green Bridge of Wales, south Pembs



Preseli Hills, north Pembs



Sand Dune Succession



Barafundle Bay, south Pembs

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