



EDEXCEL Biology

At Orielton Field Centre we are proud of our options for Edexcel 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 course outlines below please contact us to discuss possible alternatives; we can flexibly alter a course to suit your individual needs.

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Freshwater West sand dunes



At Orierton you can opt for either a flexible or recommended course. These courses all aim to prepare students for or revise the AS Unit 2, and cover content from the A2 Unit 4 whilst facilitating student’s completion of the Unit 6 Individual Investigation. 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 Available at A2	Notes	Possible Half Day
<p>Freshwater Ecology Students will undertake a fieldwork investigation to examine how abiotic factors, such as water velocity, temperature and oxygen levels affect invertebrate distribution. 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.</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 (HSW 3/5/6). 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). The role of different organisms in energy transfer and nutrient recycling will also be discussed.</p> <p>Pyramids, food chains and webs will be constructed and considered as methods of displaying energy flow through trophic levels within ecosystems, including the construction of a food chain from the data collected. 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. The efficiency of energy transfer through an ecosystem will be demonstrated.</p>	<p>Links to: Unit 4: The Natural Environment and Species Survival.</p> <p>Unit 6: Practical Biology and research skills</p> <p>HSW:1a,2b,3,5&6</p> <p>Field site(s): Stembridge Stream, Orierton Estate</p>	<p>Yes</p>
<p>Woodland Ecology Students will undertake a walk and talk exercise through Orierton’s extensive woodland, learning about conservation, management techniques and biodiversity. They will also complete a fieldwork task in order to collect data for relevant statistical analysis.</p> <p>Option 1 – Investigation into correlation between light levels and ivy leaf length (Spearman Rank Correlation Coefficient) Option 2 – Difference between abundance of ferns in managed and non-managed areas (Mann-Whitney U test)</p> <p>Follow up work includes data analysis, interpretation, drawing conclusions and evaluating techniques.</p> <p>In the evening students will learn about the impact of global warming on Britain’s woodlands, looking at interpreting climate change data and dendrochronology.</p>	<p>Links to: Unit 4: The Natural Environment and Species Survival</p> <p>Unit 6: Practical Biology and research skills</p> <p>HSW: 1a,2b,2c,3,5, 6,7,8,9</p> <p>Field site(s): Orierton Estate</p>	<p>Yes</p>

Content of Modules continued	Notes	Possible Half Day
<p>Sand Dune Succession An investigation of primary succession of plant communities (pioneer to climax) across a developing dune system. Collection of biotic data via random sampling, using point quadrats, to assess the distribution of plant communities in relation to soil quality and other environmental factors. Students will also complete a fieldwork task in order to collect data for a relevant statistical analysis. Interpretation of data to explain the relationship between abiotic and biotic factors (including soil analysis). Simpson species diversity will also be calculated.</p>	<p>Links to: Unit 4: The Natural Environment and Species Survival Unit 6: Practical Biology and Research skills HSW: 2c,3,5a,b,6 Field site(s): Freshwater West</p>	No
<p>Sheltered Rocky Shore Ecology Students will be introduced to the ecology of a sheltered rocky shore. They will carry out an investigation to identify organisms using a dichotomous key which uses simple external features for recognition. A belt transect and frame quadrats will be used to assess abundance of animals and algae using the ESACFOR scale. Data will be collected and displayed graphically using kite histograms, then analysed using Chi² association analysis. 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.</p>	<p>Links to Unit 4: The Natural Environment and species survival Unit 6: Practical Biology and Research skills HSW: 2c,3,5a,b,6,10 Field site(s): Sawdern Point</p>	No
<p>Exposed Rocky Shore Ecology Follow up day to sheltered rocky shore in order to prepare for individual investigations. Students build on techniques and ID skills learned in the previous day's rocky shore fieldwork. They will collect further data to examine process of zonation and carry out a pairs investigation to collect data in order to use Student's t-test. Students will be introduced to planning their own methods and controlling variables, using callipers for precise measurements, how to research using scientific journals and completing their own risk assessments. This will be used directly as a preparation for individual investigations.</p>	<p>Links to: Unit 4: The Natural Environment and species survival. Unit 6: Practical Biology and research skills HSW: 3,4,5a,b,6 Field site(s): Manorbier Bay</p>	No

Content of Modules continued	Notes	Possible Half Day
<p>Individual Investigations (1-2 days) Students will work individually to plan their own investigation and carry out a trial, making modifications to the original plan as necessary. They will then implement this revised plan 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 and evidence, including sources of error, may be carried out during the evening session.</p>	<p>Links to: Unit 4: The Natural Environment and Species Survival Unit 6: Practical Biology and Research skills HSW: 1a,2a,b,c,3,4,5a,b,6,10 Field site(s): West Angle Bay Angle Point Freshwater West</p>	No

Content of AS and short A2 Level sessions	Notes
<p>Introduction to Ecology and Sampling techniques (AS/A2) 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. If weather permits a short introductory sampling session can be run in the field to look at the advantages and disadvantages of different fieldwork techniques.</p>	<p>Field site(s): Orielton Estate AFTERNOON/EVENING SESSION</p>
<p>Sand Dune Introduction to Ecology and Conservation (AS) Students will visit a sand dune succession, measure species richness and diversity and plant adaptations. Also students will investigate the ecology of this delicate ecosystem and how humans can impact the area.</p>	<p>Field site(s): Freshwater West</p>
<p>Management, Conservation and Global Warming (AS/A2) 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. 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 and the ongoing conflict between the National Park’s visitors and the rare and important species and habitats in the area.</p>	<p>Field site(s): Stackpole Estate</p>
<p>Rocky Shore Introduction to Ecology and Conservation (AS) Students will visit a Rocky shore, measure species richness and diversity and consider species adaptations. Also students will investigate the ecology of this diverse ecosystem and how humans can impact the area.</p>	<p>Field site(s): West Angle Bay</p>
<p>Freshwater Introduction to Invertebrates (AS) Students will investigate a freshwater habitat, determining species richness and diversity and species adaptations. Also students will investigate the ecology of this dynamic ecosystem and how humans can impact the area.</p>	<p>Field site(s): Stembridge Stream, Orielton Estate</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, Orielson 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 Orielson'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 Orielson 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 Orielson

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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