Margam Discovery Centre

FSC Margam Discovery Centre
Margam Park
Port Talbot
SA13 2UA

Tel: 01639 895636

Email: enquiries.mp@field-studies-council.org

Edexcel A Level Biology Course Options

Margam Discovery centre is set in 600 acres of deer park, surrounded by a nearby diversity of habitats, including woodlands, streams, sand dunes, rocky shores and grasslands. The building, an example of sustainable design, has good road and rail links making Margam ideal for short courses. For longer courses, the surrounding area has an unrivalled range of natural environments to investigate. These include the Kenfig NNR dune system, South Wales Heritage Coastline, Gower Peninsula and Brecon Beacon National Park all a short drive away.

Tuition is delivered by talented teachers, with not only an expert knowledge of their subject and field work locations, but a passion for the subject being taught. Our education team are fully DBS checked, and undergo a regular and rigorous training process. All tutors have received training in first aid and water safety.

Course options listed here can be selected to put together a programme designed to meet the requirements of your specification. However, if you need something that is not catered for in the field work investigations, please contact us to discuss possible alternatives.

Please visit
http://www.field-studies-council.org/centres/margamdiscoverycentre.aspx
for more information, options for KS2, KS3, GCSE and A level and virtual tour of the Margam Discovery Centre

Green Tourism GOLD · Wales Cymru ★★★★★ · Eco-Centres · FSC · Quality Badge awarded by Council for Learning Outside the Classroom · Secondary Geography Quality Mark Partner · Investor in People

A2 Edexcel Biology Fieldwork investigations

Content	Specification links & additional information	Possible half day
Freshwater sampling techniques & trophic structure Students will examine microhabitats within a stream ecosystem to investigate the effect of abiotic factors on the distribution of freshwater invertebrates (4.5.10/ 4.10.11/ HSW1a). Students will carry out a risk assessment of the investigative fieldwork (HSW4). Density of invertebrates will be sampled using kick sampling and abiotic factors, such as velocity, will be measured. Organisms will be identified keys, and classified using the five kingdoms system to Family level. Data will be collated and analysed using scatter graphs and Spearman's Rank Correlation or Mann Whitney U Test (HSW3/5a/6). This will provide the basis for a discussion on NPP calculations and explanation of relationship between NPP, GPP & plant respiration (4.5.7/HSW2b/2c/6). The efficiency of energy transfer will also be considered (4.5.8/ HSW2b/2c/6).	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills **Field site(s):** Nant Philip, Margam Park	**Yes**
Freshwater pollution Students will undertake a field work investigation to compare the health of ponds across Margam Park (4.5.10, 4.5.11, HSW1/4). Levels of organic pollution will be measured using Biotic Index and nutrient content analysis. This will be used to examine the causes and impacts of eutrophication. Data will be analysed and evaluated in the classroom (HSW5a/6)	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills **Field site(s):** Margam Park Furzemill pond and Discovery centre pond.	**Yes**
Succession: Sand Dunes An investigation of primary succession of plant communities (pioneer to climax community) across a sand dune ecosystem (4.5.13/ HSW1a). Collection of biotic data along a belt transect, using point frame quadrats to assess the distribution of plant communities in relation to abiotic (climatic and edaphic) gradients (4.5.11/ HSW2c). Interpretation of biotic and abiotic data using spreadsheets and graphical techniques, including kite diagrams (HSW5a). Discussion of plant communities, using named examples, and their relation to the abiotic factors, including adaptations e.g. nitrogen fixation (4.5.10). Discussion of the effects of management and conservation on Kenfig Dune system, including the impact of climate change in determining climax communities (4.5.15).	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills **Field site(s):** Kenfig NNR Transport required (10 minute drive)	**No**
Ecology Sampling Techniques: Grasslands Investigations into a grassland ecosystem to explore sampling techniques and ecological theory (4.5.10/ HSW1a/2c). This will include development of appropriate terminology and ecological definitions (e.g. Habitat, population etc). **Investigation 1:** The use of belt transects to investigate the distribution of grassland plants up a slope (4.5.10/ 4.5.11/ HSW1a). This will include the use of keys to identify species and data collection using quadrats. Discussion of niche, competition and the effects of biotic and abiotic factors in determining numbers and distribution of organisms in a habitat (4.5.10/ 4.5.12/ HSW2c). Analysis and interpretation of data using graphical techniques and the Spearman Rank Correlation Coefficient (HSW3/5a/5b). Students will evaluate methodology, data & evidence (HSW6). **Investigation 2:** Random sampling and percentage cover measurements using quadrats to compare the distribution of grassland plants between grazed/unmown and mown grasslands. (4.5.10/ 4.5.11/ HSW1a). Analysis and interpretation of data using graphical techniques and the Mann	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills *Revisits AS content* **Field site(s):** Meadows around Margam Discovery Centre No Transport Required	**Yes**

Whitney U test (HSW3/5a/5b). Students will evaluate methodology, data & evidence (HSW6).		
Ecology Sampling Techniques: Woodlands Investigation into a woodland ecosystem to explore sampling techniques and ecological theory (4.5.10/ HSW1a/2c). This will include development of appropriate terminology and ecological definitions (e.g. Habitat, population etc). Random sampling and percentage cover measurements using quadrats to compare the distribution of woodland plants between broadleaf/coniferous woodlands. (4.5.10/ 4.5.11/ HSW1a). Analysis and interpretation of data using graphical techniques and the Mann Whitney U test (HSW3/5a/5b). Students will evaluate methodology, data & evidence (HSW6).	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills Field site(s): Woodlands on the Margam Country Park No Transport Required	**Yes**
Zonation & adaptations: Rocky Shore Field work focuses on the zonation of lichens, seaweeds and animals down a rocky shore after introduction and risk assessment (HSW4). Students will identify organisms and quantify them using abundance scale on a vertical belt transect (4.5.11, HSW). Students will use their data to examine the effect of abiotic and biotic gradients on the distribution of organisms, including interspecific and intraspecific competition in Barnacle species (4.5.10, HSW1a). The behavioural, physiological and anatomical adaptations of organisms to harsh conditions will also be considered (HSW1a). Students present data graphically and analyse using the some data using the student t-test (HSW3/5a/5b).	**Links to:** Unit 4: The natural environment and species survival Field site(s): Bracelet Bay, Gower Peninsula ***Availability of this day will be tide dependent*** Transport required (30 minute drive)	**Yes**
Individual investigations- Planning and pilot study Students will be given guidance and support to enable them to research an develop a hypothesis(es), which will be the basis for their individual scientific investigation (6/ HSW1a/2b/2c). Students will work within a tutor led time frame to complete a thorough and well researched plan, including choice and justification of methods, analyses and risk assessment (HWS3/ 4/ 5a/ 5b). Pilot studies will provide students with the opportunity to assess and modify their techniques (6/ HSW3).	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills. **Field site(s):** Wide variety of habitats across Margam Country Park. Possibility to use Kenfig Dune system (Transport required)	**Yes**
Individual investigations- Data collection, analysis and evaluation Students will implement and revise their plans to collect valid and reliable data (HSW3). On return to the centre, students will be supported through the handling and analysis of their data (HSW3/ 5a). Data interpretation and evaluation of methodology, data and evidence, including sources of error, may e carried out during the evening session (HSW5b/ 6).	**Links to:** Unit 4: The natural environment and species survival Unit 6: Practical Biology & research skills **Field site(s):** Wide variety of habitats across Margam Park. Possibility to use Kenfig Dune system (Transport required)	**No**

FSC Outdoor Classroom

A2 Edexcel Biology Additional evening investigations

Optional additional evening options will all be based in the centre and the immediate area.

Content	Specification links & additional information
Innate behaviour Students will set up a choice chamber experiment to look at innate behaviours in an invertebrate population (woodlice or freshwater shrimp)	**Links to:** Unit 5 Excercise, energy and coordination, Topic 8 Grey Matter

A2 Edexcel Biology Additional evening investigations

(5.8.14). They will analyse data using Chi square and this will form the basis for a discussion on animal movements and behaviour. *This evening sessions fits well with the Freshwater and woodland modules outlined above.*	
Climate change & dendrochronology Using samples from locally felled trees and data from nearby weather stations, students will investigate the link between tree ring growth and climate. This will enable them to better understand biological indicators of climate change.	**Links to:** Unit 4 The natural environment and species survival, Topic 5 On the wild side (Looking at the evidence 4.5.18)
Estimating populations Mark release recapture will be used to determine an estimate of population size. Trapping of small mammals using Longworth traps.	**Links to:** Unit 4 The natural environment

What is included in the fee?

- *Up to 10 hours of tuition a day*
- *Expert tuition, from fully trained staff*
- *Full board accommodation, in en suite room. Catering includes Cooked breakfast, picnic lunch, homemade cakes and evening meal.*
- *Use of facilities including workrooms, recreational space, ICT and centre grounds*
- *Established health and safety procedures and 24 hour emergency cover*
- *Access to specialist equipment and resources*
- *Support before and following the course*

Adventurous activities

Taster sessions in Canoeing, Kayaking and mountain biking are possible, through local and accredited outdoor providers. These activities may help develop team building, personal skills and environmental understanding as well as give students a different view of the landscape and its unique environments. An option to go to Go Ape can also be organised.

To book a course, simply:

1. Choose the time of the year you would like to attend

2. Contact us at Margam by e-mail at enquiries.mp@field-studies-council.org or by phone 01639 895636 to check availability and prices.

Quality Badge awarded by Council for Learning Outside the Classroom

External Recognition of Quality

Margam Discovery Centre has been awarded the Quality Badge by The Council for Learning Outside the Classroom. The badge is awarded to organisations that have demonstrated that they consistently deliver high quality teaching and learning experiences and manage risk effectively.

This means that you will have to complete less paperwork when visiting our centre

FSC Margam Discovery Centre, Margam Park, Port Talbot, SA13 2UA
Tel: 01639 895636 E-mail: enquiries.mp@field-studies-council.org Website: www.field-studies-council.org/centres/margamdiscoverycentre.aspx