Malham Tarn Field Centre, in the Yorkshire Dales National Park, occupies a large Georgian country house, leased from the National Trust. Malham Tarn is an unusual lime-rich upland lake, set amid a variety of habitats with a range of nationally-scarce species. To the west of the Tarn is an area of fen and raised bog, while the surrounding grassland has areas of limestone pavement and a rich flora. The woodland around Tarn House is also of conservation importance. The Tarn and its associated wetlands and woodlands form a National Nature Reserve. The reserve is part of the much larger Malham-Arnlcliffe Site of Special Scientific Interest. The area’s importance in an international context is recognised by its designation as a RAMSAR site and as a Special Area of Conservation.

Malham Tarn Field Centre uses hands on experiential learning to engage students in the outdoor environment. Our courses have been designed to allow for specification content coverage in a contextual approach so that learners can reflect on their experiences, make links between different topics, build fieldwork skills and critically analyse the scientific investigation procedure. For more information about our approach, please visit the Real World Learning Network. Students will have access to outstanding fieldwork sites specific to this area of the Yorkshire Dales; including alkaline freshwater streams, raised peat bog, fen and limestone grassland. All modules will cover the OFQUAL set math skills A 0.1, A0.2, A 0.3 & A 1.1 and present an opportunity for students to cover skills outlines in module 1 (1.1.1; 1.1.2; 1.1.3 a-c; 1.1.4; 1.2.1 a-f, h & j) and for students to be assessed on PAG 3 and provide opportunities to review examination questions in context.
## OCR B Ecological principles in a human context – 5 days

<table>
<thead>
<tr>
<th>DAY</th>
<th>MORNING</th>
<th>AFTERNOON</th>
<th>EVENING</th>
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</thead>
</table>
| 1   | Arrive midday  
H&S, rooms, waterproof hire | Classification, variation and adaptation  
An introduction to sampling techniques and strategies. Students will focus on how to design a solid fieldwork method including how to record accurate, reliable, precise and representative data. A selection of fieldwork sessions will aim to immerse students in their surroundings, encourage synoptic links and ask students to consider what ecology means. Also includes An introduction to classification, taxonomy and biodiversity and how natural selection makes use of adaptations within farming.  
Specification links: 4.3.1 m ii; 3.1.3 | |
| 2   | Food chain efficiency and sustainability  
An investigation into the distribution and abundance of freshwater invertebrates of Gordale Beck; students will collect distribution data in order to gain an overview of the species interacting within the ecosystem, consider what will affect where an invertebrate can survive (adaptations), sources of energy flow and human impacts on energy flow. Student t-test, range and standard deviation will be calculated and eltonian pyramids analysed to form conclusions about distribution and energy flow. A light and dark bottle experiment will be completed in order that students can calculate GPP and NPP. Students will also look at the use of freshwater invertebrates as biotic indicators.  
Specification links: 4.3.1 i, j | How does it work?  
Review and application  
Students will review their learning through reference to the set objectives using a variety of individual and peer review. This may include links to local, national or global issues, key ecological concepts and exam questions. | |
| 3   | Human effects on the environment  
An investigation into the biodiversity of pastoral farmland and the impact of different management techniques; this module provides opportunities for students to collect plant diversity data, consider land use, conservation, the resultant conflicts and what will affect where a plant can survive (adaptations). Students will complete fieldwork observations and data collection, analyse results using Simpson’s Diversity Index to form conclusions.  
Specification links: 3.1.3 h; 4.3.2 c; 4.3.1 i, ii | | |
| 4   | Managing succession (PAG 3)  
An investigation into the stages of succession and how to measure seral stages within a hydrosere community. Students will consider the changes in plant communities through the seral stages, identifying key vegetation for each seral stage and measure the abiotic changes associated with the vegetation change. Students will analyse their results using Spearman’s Rank, kite diagrams and scatter diagrams to form conclusions. This will also include the consideration of a plagioclimax and species diversity.  
Specification links: 4.3.1 m i | PAG 12 - plan  
Students will work individually or in small groups using their knowledge to plan an investigation for against the CPAC criteria. | |
| 5   | PAG 12 - investigation  
Students will carry out the investigation they planned in the previous session, with the intention that they will write up their report in the style of a scientific paper. | Course ends at 12.00 | |
### Additional options

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<tr>
<th>DAY</th>
<th>MORNING</th>
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</thead>
<tbody>
<tr>
<td>Full</td>
<td><strong>Habitat Diversity: Tarn Moss</strong></td>
<td></td>
<td><strong>Maintaining biodiversity and resources</strong></td>
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<td></td>
<td>An investigation into the biodiversity of a very special habitat; and the impact of different management techniques; this module provides opportunities for students to collect plant diversity data, consider land use, conservation, the resultant conflicts and what will affect where a plant can survive (adaptations). Students will complete fieldwork observations and data collection, analyse results using Simpson’s Diversity Index to form conclusions.</td>
<td></td>
<td>Students will consider the conflict between human need and natural resources, the impacts of conservation measures, adaptations and site specific observations.</td>
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<tr>
<td></td>
<td>Specification links: 3.1.3 h; 4.3.2 c</td>
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<tr>
<td>Half</td>
<td>Also available as a half day option, students will complete the same fieldwork but will not receive the guided follow up (analysis and conclusions) or take the same amount of field data.</td>
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<tr>
<td>Full</td>
<td><strong>Species Diversity: Freshwater</strong></td>
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<td>An introduction to classification, taxonomy and biodiversity; this module provides opportunities for learners to collect fieldwork from a freshwater stream, identify organisms and calculate species diversity whilst reflecting on the limitations of fieldwork data collection of mobile organisms and what will influence where an organism lives (adaptations). Learners will consider current taxonomic systems and binomial naming, complete fieldwork observations and data collection, analyse results using Simpson’s Diversity Index, evaluate their methodology and analyse their results to form conclusions considering method limitations, adaptations and site specific observations.</td>
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<tr>
<td></td>
<td>Specification links: 3.1.3 a, b, e &amp; h; 4.3.2 c</td>
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<tr>
<td>Full</td>
<td><strong>Populations: Malham Tarn</strong></td>
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<td>A scene setting introduction to Malham Tarn, sampling techniques and sampling strategies. Learners will focus on the nuts and bolts of how to design a solid fieldwork method. A selection of fieldwork sessions will aim to immerse students in their surroundings, encourage synoptic links and ask students to consider what ecology means. A selection of contextual fieldwork sessions will cover site observations, quadrat types and applications, systematic sampling, random sampling. Analysis will include Spearman’s Rank, Student t-test, mean, range, standard deviation and Lincoln index considering percentage error within a controlled mark-release-recapture study.</td>
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<td></td>
<td>Specification links: 4.3.1.m ii</td>
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<tr>
<td>Full</td>
<td><strong>Succession: Lithosere</strong></td>
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<td>An investigation into the stages of succession and how to measure seral stages within a lithosere community. Learners will consider the changes in plant communities through the seral stages, identifying key vegetation for each seral stage and measure the abiotic changes associated with the vegetation change. Learners will complete fieldwork observations and systematic data collection, including canopy plots, evaluate their methodology and analyse their results using Spearman’s Rank, kite diagrams and scatter diagrams to form conclusions considering method limitations, adaptations and site specific observations.</td>
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<td>Specification links: 4.3.1 m l</td>
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<tr>
<td>Half</td>
<td>Also available as a half day option, learners will complete a reduced amount of fieldwork and will not receive the guided follow up (analysis and conclusions).</td>
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### Full

**Succession Skills: Hydrosere & Lithosere**

An investigation into the stages of succession and how to measure seral stages within a lithosere and hydrosere community. Students will consider the changes in plant communities through the seral stages; with a focus on the application of sampling strategies identifying key vegetation for each seral stage and measure the abiotic changes associated with the vegetation change. Students will complete fieldwork observations and systematic data collection in one of the seres, analyse the data using Spearman’s Rank, kite diagrams and scatter diagrams to form conclusions, evaluate their methodology considering method limitations then reflect on these conclusions to design and evaluate their own transect study in the second sere.

*Specification links: 4.3.1 m i*

### Full

**Resource conflict and climate change: Forestry**

Travel Cost: £6.50 per student

An investigation into the management of a forest for timber production and the balance achieved by the Forestry Commission in managing a working forest and recreational site, including the effect on the biological viability of the site. Students will consider the conflict between managing a site for commercial wood production, recreation and conservation, complete fieldwork observations and data collection at Gisburn Forest, analyse their results using ArcGIS and will calculate volume of wood production and percentage yield to make conclusions regarding effectiveness of wood management verses.

*Specification links: 4.3.2*

### Full

**Resource conflict and climate: Quarry**

Travel Cost: £6.50 per student

An investigation into the variety of climate monitoring and resource extraction techniques and the impact of resultant changes on the natural world. Students will consider the conflict between human need and natural resources, the impacts of conservation measures, complete fieldwork observations and data collection at a local working quarry, analyse results using Simpson's Diversity Index, evaluate their methodology and analyse their results to form conclusions considering method limitations, adaptations and site specific observations. Additional activities will include dendrochronology, interpretation of big data sets and UK wide project participation (OPAL).

*Specification links: 4.3.2 b*

### Half

Also available as a half day option, students will complete the on-site activities, but will not visit the quarry and complete the quarry related data collection.
**What is included in the fee?**
- Up to 10 hours of tuition a day
- Expert tuition, from fully trained staff
- Full board accommodation. Catering includes cooked breakfast, packed 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

**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, risk assessment and water safety.

**Course options** listed in this booklet can be selected to put together a programme designed to meet the requirements of your specification. However, if you have specific requirements, please contact us to discuss possible alternatives.

Malham Tarn 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.