

## Curriculum Links Reference Book: Key Stage 4

### **English**

The National Curriculum for English reflects the importance of spoken language in learners' development across the whole curriculum. Through our sessions, the benefits and curriculum links will vary greatly depending on the group, with each session being tailored to the needs of the group.

Sessions will particularly aid in the following:

- Learning of new vocabulary
- Use of descriptive English
- Using standard English confidently in a range of formal and informal contexts
- Classroom discussion and expression of own ideas
- Summarising and/or building on what has been said

The sessions provide multiple opportunities for extended learning, for example:

- Writing descriptive accounts
- Working effectively in groups of different sizes and taking on required roles
- Discussing outcomes
- Comparing and contrasting activities on site to those at school
- Listening and responding in a variety of different contexts
- Evaluating content, viewpoints, evidence and aspects of presentation

### **Mathematics**

Mathematics is integral to many Field Studies sessions, helping studies become fluid in their approach. The extent to which Mathematics is covered will greatly depend on the needs of the groups.

Sessions may aid in the following:

- Extending KS3 knowledge to further develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.
- Use mathematical language and properties precisely
- Calculate with numbers in standard form
- Apply and interpret limits of accuracy when rounding
- Plot and interpret graphs
- Compare lengths, areas and volumes using ratio notation and/or scale factors
- Convert between related compound units
- Interpret the gradient of a straight line graph as a rate of change
- Construct and interpret plans and elevations of 3D shapes
- Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling
- Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through:
  - Appropriate graphical representation involving discrete, continuous and grouped data
  - Applying statistics to describe a population
  - Use and interpret scatter graphs, recognize correlation, draw estimated lines of best fit, make predictions.

### **Citizenship**

We understand that citizenship education helps young people to develop the skills, knowledge and understanding required to prepare them to play a full and active part in society. The Citizenship curriculum is embedded within

practice at Avon Tyrell. Learners are encouraged to work within a team environment, managing their own time and resources, making and debating reasoned arguments, and exploring social issues in a safe environment.

## Science

The principle focus of the Science National Curriculum at KS4, is to develop learners analytical skills and start linking together big ideas in preparation for GCSE examinations. Our Field Studies sessions address a wide range of curriculum topics, with a particular focus on the Biology syllabus and Working Scientifically.

### Working Scientifically

#### *Scientific attitudes*

1. Evaluate risks in both practical science and the wider societal context, including perception of risk
2. Explaining everyday applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments

#### *Experimental skills and strategies*

1. Use scientific theories and explanations to develop hypotheses
2. Planning experiments to make observations, test hypotheses or explore phenomena
3. Applying a knowledge of a range of techniques, apparatus, and materials to select those appropriate for fieldwork and for experiments
4. Carrying out experiments appropriately, having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations
5. Recognising when to apply a knowledge of sampling techniques to ensure samples are collected are representative
6. Making and recording observations and measurements using a range of apparatus and methods
7. Evaluating methods and suggesting possible improvements and further investigations

#### *Analysis and evaluation*

1. Applying the cycle of collecting, presenting and analysing data
2. Presenting observations and other data using appropriate methods
3. Translating data from one form to another
4. Carrying out and representing mathematical and statistical analysis
5. Interpreting observations and other data, including identifying patterns and trends, making inferences and drawing conclusions
6. Presenting reasoned explanations, including relating data to hypotheses

#### *Vocabulary, units, symbols and nomenclature*

1. Developing their use of scientific vocabulary and nomenclature
2. Using SI units
3. Using prefixes and powers of ten for orders of magnitude
4. Interconverting units
5. Using an appropriate number of significant figures in calculations

### Subject content - Biology

#### Universal ideas

1. Living organisms may form populations of single species, communities of many species and ecosystems, interacting with each other, with the environment and with humans in many different ways
2. Living organisms are interdependent and show adaptations to their environment
3. Life on Earth is dependent on photosynthesis in which green plants and algae trap light from the Sun to fix carbon dioxide and combine it with hydrogen from water to make organic compounds and oxygen

4. The chemicals in ecosystems are continually cycling through the natural world

#### Photosynthesis

1. Photosynthesis as the key process for food production and therefore biomass for life
2. Factors affecting the rate of photosynthesis

#### Ecosystems

1. Levels of organization within an ecosystem
2. Some abiotic and biotic factors which affect communities; the importance of interactions between organisms in a community
3. How materials cycle through abiotic and biotic components of ecosystems
4. The role of microorganisms (decomposers) in the cycling of materials through an ecosystem
5. Organisms are interdependent and are adapted to their environment
6. The importance of biodiversity
7. Methods of identifying species and measuring distribution, frequency and abundance of species within a habitat
8. Positive and negative human interactions with ecosystems

#### Evolution, inheritance and Variation

1. Genetic variation in populations of species
2. The evidence for evolution
3. Developments in biology affecting classification

#### Subject content – Chemistry

##### Earth and atmosphere

1. Potential effects of, and mitigation of, increased levels of carbon dioxide and methane on the Earth's climate
2. Common atmospheric pollutants; Sulphur dioxide, oxides of nitrogen, particulates and their sources
3. The Earth's water resources and obtaining potable water

At KS4, our Field Studies sessions offer a wide range of practical scientific skills as well as curriculum knowledge.

#### Art and Design

At Avon Tyrrell, we aim to engage, inspire and challenge learners, encouraging them to experiment and create their own pieces of art, craft and design.

Sessions may support the following areas:

- Active engagement in the creative process of art, craft and design
- Development of effective and independent learners
- Encourage confidence in risk taking and learning from experience
- Developing critical understanding
- Acquisition and development of technical skills through working with a broad range of media, materials, techniques, processes and technologies with purpose and intent

#### Design and Technology

Developing a creative and technical understanding enables young people to perform task confidently and to participate successfully in a technological world. Learners need to learn to become resourceful, taking appropriate risks to develop ideas and solve problems.

## Geography

The Geography National Curriculum aims to ensure that all learners develop an understanding of the key physical and human geographical features of the world, as well as geographical key skills. The New Forest offers a wide range of geographical features for study.

### Universal ideas

1. Develop and extend KS3 Knowledge of locations, places, environments and processes.
2. Gain understanding of the interactions between people and environments, changes in places and processes over space and time, and the interrelationship between geographical phenomena at different scales and in different contexts
3. Develop and extend their competence in a range of skills including those used in fieldwork, including map use
4. Apply geographical knowledge, understanding, skills and approaches appropriately and creatively to real world contexts, including field work
5. Develop well-evidenced arguments drawing on their geographical knowledge and understanding

### Locational Knowledge

1. Recognition of important links and inter-relationships between places and environments at a range of scales from local to global

### Maps, fieldwork and geographical skills

1. Develop the use of a range of maps, atlases, Ordnance Survey maps, satellite imagery and other graphic and digital material
2. To make maps and sketches to present and interpret geographical information
3. Different approaches to fieldwork undertaken in at least two contrasting environments. Fieldwork overall should include exploration of physical and human processes and the interactions between them and should involve a collection of primary physical and human data
4. Data should include both qualitative and quantitative data and data from both primary and secondary sources
5. Includes the effective presentation, communication and evaluation of material

### Place: processes and relationships

1. Geography of the UK – Knowledge and understanding of the UK's geography, both in overview and with some in depth study, to include its physical and human landscapes, environmental challenges, changing economy and society, the importance of cultural and political factors, and its relationships with the wider world.

## History

Avon Tyrrell is steeped in local History – the house is a Grade I Listed building and is situated on the edge of The New Forest National Park.

We understand that, depending on your syllabus, your curriculum needs will vary. That is why we tailor our sessions depending on the needs of the group.

In the past, we have developed:

- Local history studies – with Burley on our doorstep, there is plenty of opportunity to look at our local history.
- Historical studies of the Main House – our Calendar House is a unique building with an interesting history.

## Physical Education

With a wide range of outdoor activities available at Avon Tyrrell, there are many ways to link to the National Curriculum for Physical Education, to enable all young people to succeed and excel in a wide range of physically demanding activities. Our activities provide the perfect opportunity for learners to become physically confident in a way which supports their health and fitness.

Young people can take part in outdoor and adventurous activities, which present intellectual and physical challenges and are encouraged to work in a team, building on trust and developing skills to solve problems, either individually or as a group. There is the opportunity to develop leadership skills in preparation for the coaching elements of GCSE Physical Education, as well as the chance to try new activities and develop their portfolio further.