



## **STAFF**

Science is taught by the following members of staff:

Mr S Williams	Head of Department
Mrs Totton	Subject Leader Chemistry
Mr Woolhouse	Subject Leader Physics
Mr R Briggs	Deputy Headteacher / Teacher of Biology
Miss Fitzgerald	Teacher of Biology
Mr Paxton	Teacher of Physics
Miss Rushton	Teacher of Biology

## **DEPARTMENT VISION**

The Science team at Biddulph High School wants all students to aim high and achieve beyond expectations. We have developed a challenging programme of study which provides a curriculum to inspire enquiring minds. All students are unique and we want students to thrive in their Science lessons regardless of their starting point. We want them to feel empowered to develop their talents and have the confidence to voice their opinions, and to never stop asking questions. All students will be challenged and encouraged to embrace new ideas and information; they will develop the skills needed to become autonomous learners who actively seek out ways to become better. We want students to develop a lifelong love of learning and be equipped with the skills needed for the wider world whether that be vocational settings or further education.

## **AIMS**

Science and the understanding of Science is integral to everyday life. Science is a way of helping the brain grow in finding new knowledge and helps us defeat our curiosity of how the world develops and works today. Science is important because it has helped to form the world that we live in today. With this in mind, the goal of Science department is to prepare students to be responsible adults in an increasingly complex and dynamic world.

Biddulph Science curriculum provides students with the foundations to understand the inner workings of this world using scientific processes and concepts from all fields of endeavor: Biology, Chemistry, and Physics. Students will experience in Science the opportunities of visits, competitions, extra-curricular clubs and collaboration across the PET/ Pyramid.

The Science department aims to grasp students' curiosity as much as possible through exciting lessons; creating an environment where students will need to critically think and provide logical reasoning using various methods of investigation, such as observation, comparison, experimentation, and mathematical manipulation of data.

## KEY STAGE 3 – YEAR 9

YEAR 9	OCR Gateway	BIOLOGY	CHEMISTRY	PHYSICS
Autumn Term	1	Microscopes and Cell Structure	The Particle Model	The Atomic Model
	2	Respiration	Purity and Separation	Energy and Temperature
Spring Term	1	Photosynthesis	Chromatography	Pressure
	2	Protein Synthesis	Types of Chemical Reaction	Circuits
Summer Term	1	Enzymes	Earth Systems	Resistance
	2	Supplying the Cell	Electron Arrangement	Sensing Circuits

## KEY STAGE 4 – YEAR 10

YEAR 10				
Autumn Term		SUPPLYING THE CELL (CONTINUED) 2.1 b	Bonding	Magnets and Magnetic Fields P4.1
	1	THE CHALLENGES OF SIZE I B2.2A	Giant Covalent Structures	Electricity P4.2
		THE CHALLENGES OF SIZE II B2.2b	The Periodic Table	Motion P2.1
		THE NERVOUS SYSTEM B3.1		Motion P2.1
	2	Finish B3.1 and start B3.2 - Endocrine System	Energetics	Newtons Laws P2.2
		B3.2 continued	Electrolysis	Materials P2.2
Spring Term		MAINTAINING INTERNAL ENVIRONMENTS B3.3	Moles and Reacting Masses	Machines P2.3
	1	B3.3 continued and Start B4.1	Gas Volumes and Predicting Yields	Waves P5.1
		B4.1 Ecosystems	Reactions of the Periodic Table	Electromagnetic Waves P5.2
		B4.1 continued, start B5.1	Noble Gases	Electromagnetic Waves and Matter P5.3
	2	INHERITANCE B5.1 continued	Rates	Energy P7.1
		INHERITANCE B5.1 continued	Catalysis	Energy and efficiency 7.2.1

**YEAR 10 CONTINUED ..**

<b>Summer Term</b>		B6.1 BIODIVERSITY & SAMPLING	Equilibria	Efficiency P7.2
	1	PAG Block 1	Cation and Anion Testing	Radioactivity P6.1
		PAG Block 2	Analytical Techniques	Fission and Fusion P6.2
		Mock exams	Mock Exams	Mock exams
	2	Practical endorsement	Practical Endorsement	Practical endorsement

**KEY STAGE 4 – YEAR 11**

**YEAR 11**

<b>Autumn Term</b>		FEEDING THE HUMAN RACE B6.2	Fertilisers	Global Challenges P8.1
	1	Continue B6.2 and start B6.3	Metal Extraction	Motion and Stopping Distances
		MONITORING & MAINTAINING HEALTH 6.3 continued	Choice of Materials	Forces in Collisions
		NON COMMUNICABLE DISEASE 6.3 Part 2	Carbon Chemistry	Resources P8.2
	2	NON COMMUNICABLE DISEASE 6.3 Part 2 continued	Homologous Groups	Energy Sources
		COMMUNICABLE DISEASE 6.3	Polymers	How we use Energy
<b>Autumn Term</b>		FEEDING THE HUMAN RACE B6.2	Fertilisers	Global Challenges P8.1
	1	Continue B6.2 and start B6.3	Metal Extraction	Motion and Stopping Distances
		MONITORING & MAINTAINING HEALTH 6.3 continued	Choice of Materials	Forces in Collisions
		NON COMMUNICABLE DISEASE 6.3 Part 2	Carbon Chemistry	Resources P8.2
	2	NON COMMUNICABLE DISEASE 6.3 Part 2 continued	Homologous Groups	Energy Sources
		COMMUNICABLE DISEASE 6.3	Polymers	How we use Energy

**YEAR 11 CONTINUED ..**

<b>Spring Term</b>		NON COMMUNICABLE DISEASE 6.3 Part 2 continued	Global Warming and Climate Change	Space P8.3
	1	Exercise and Diet	Data Analysis	Satellites and Orbits
		Treating CVD		Our Solar System
		Module 1-3 Review	Module 1-3 Review	Module 1-4 Review
	2	Practical Endorsement Review	Practical Endorsement Review	Practical Endorsement Review
		Module 1-3 Exam Questions	Module 1-3 Exam Questions	Module 1-4 Exam Questions
<b>Summer Term</b>		Module 4-6 Review	Module 4-6 Review	Module 5-8 Review
	1	Practical Endorsement Review	Practical Endorsement Review	Practical Endorsement Review
		Module 4-6 Exam Questions	Module 4-6 Exam Questions	Module 5-8 Exam Questions
	2	Exams	Exams	Exams
<b>Spring Term</b>		NON COMMUNICABLE DISEASE 6.3 Part 2 continued	Global Warming and Climate Change	Space P8.3
	1	Exercise and Diet	Data Analysis	Satellites and Orbits
		Treating CVD		Our Solar System
		Module 1-3 Review	Module 1-3 Review	Module 1-4 Review
	2	Practical Endorsement Review	Practical Endorsement Review	Practical Endorsement Review
		Module 1-3 Exam Questions	Module 1-3 Exam Questions	Module 1-4 Exam Questions

## **SUBJECT POLICY**

Students need information and guidance in order to plan the next steps in their learning. The Science department believe that oral and written feedback are closely interrelated and provide opportunities for staff to identify students' strengths and to give clear and constructive advice on which areas need improvement. A supportive classroom ethos is essential so that students feel safe to take risks, for example by giving speculative responses to challenging questions.

Once teaching routinely provides good oral feedback, then it is possible to provide more informative and selective written feedback.

## **ORAL FEEDBACK WITHIN THE SCIENCE DEPARTMENT:**

Oral feedback is a powerful force for moving students on and will be the most regular and interactive form of feedback used. It is both direct (targeted to individuals or groups), but also indirect (others listen and reflect on what has been said). Students should be provided with oral feedback in every lesson. Oral feedback may be provided in a variety of ways:

- Correcting an error;
- Providing information;
- Appraising and praising;
- Challenging;
- Seeking clarification;
- Urging amplification, exploration or development;
- Redirecting learning or activity;
- Focusing or orienting learning;
- Confirmation and moving learning on;
- Crystallising steps;
- Distilling and summarising learning;
- Encouraging students to reflect.

Staff will use a variety of oral feedback measures, the main purposes of using different types of feedback is to:

- acknowledge what students have learned and encourage them to reflect on and extend their learning still further;
- recognise that students need time to reflect on their learning;
- encourage students to pose further questions to clarify or further develop their own or each other's thinking;
- encourage students to make next steps;
- Teachers' comments should always be both positive – recognising students' efforts and achievements to date, and developmental – offering specific details of ways forward.

## **WRITTEN FEEDBACK**

Teachers are required to provide students with written feedback where necessary and this will assist students to recognise their next steps in learning and how to take them. Written feedback will be constructive through the use of self-evaluation and teacher feedback sheets ensuring that students are clear about what is expected of them. It is important (for staff) to consider how prompt and regular feedback can be given that will encourage students to think about their work and the task. The written feedback will:

- focus on the next steps after formative assessments selectively;
- confirm that students are on the right track through the use of teacher feedback sheets;
- stimulates the correction of errors or improvement of a piece of work;
- scaffolds or supports students' next steps;

Examples of the type of written feedback that students will be provided with by staff within the Science department are:

- focused on the use of subject specific terminology and compliant with the BHS Literacy Policy through writing specific keywords at the start of lessons;
- individual feedback sheets after formative and summative assessments;
- simple question prompts: Why? How? Explain?
- linked to success criteria, mark schemes and level descriptors;
- linked to modelling of exemplar answers “WAGOLL”;
- quizzing;
- deeper-marking every 5<sup>th</sup> lesson after exam specific formative assessments.

### **PEER AND SELF- ASSESSMENT/FEEDBACK:**

Science staff will also aim to ensure that there are regular opportunities for both peer feedback and self-assessment. In order for this to be effective the following will be taken into consideration:

- The criteria for evaluating any learning achievements must be transparent to students to enable them to have a clear overview, both of the aims of their work and of what it means to complete it successfully;
- Students will be taught the habits and skills of collaboration in peer assessment;
- Students should be encouraged to keep in mind the aims of their work and to assess their own progress to meet these aims as they proceed;
- Checklists and reference to mark schemes will be utilised in order to support students in the decision making process.

### **STUDENT RESPONSES TO FEEDBACK:**

Students in Science lesson will be required to regularly and purposefully engage with the feedback provided by staff:

- Students should be engaged in a reflective review of the work they have done to enable them to plan their revision effectively.
- Students should be encouraged to set steps to success to help them, both to understand the assessment process and to focus further efforts for improvement.
- Students should be encouraged through peer and self-assessment to apply criteria to help them understand how their work might be improved.
- Students should strive to be pro-active and should be prepared to learn.
- Purple Pen responses should be:
  - a response to feedback;
  - improvement – extension;
  - re-draft;
  - completion of a correction;
  - to work to “close the gap” on the issues identified.

- Students should also ensure that their work displays high levels of presentation and that it meets the standards and expectations of class teachers.

## OPPORTUNITIES AND VISITS

- Chester Zoo;
- Spectroscopy in a Suitcase;
- Manifold Valley.

## GCSE:

- Assessment

All GCSE examinations in Science are externally assessed.

All three subjects in Science (Biology, Chemistry and Physics) have two papers per subject, one consisting of Year 10 content and one for Year 11. Each examination is 1 hour and 45 minutes long and candidates will receive a grade of 9-1, for each GCSE.

All students are assessed by examinations, there is **no coursework component**. However, students have to complete a certain number of practical activities during their course called PAGs (Practical Activity Group), and the knowledge and skills they develop from these activities are tested in the written examination.

## INTERVENTION AND REVISION PROGRAMME:

SUBJECT	OPEN REVISION	INTERVENTION	FOCUS ON GRADES 7-9
Biology	Friday lunchtime in Room 218 Miss Rushton	Friday lunchtime in Room 219 Miss Fitzgerald	Tuesday lunchtime Room 209 Mr Williams
Chemistry	Wednesday lunchtime Room 112 Mrs Totton	Wednesday lunchtime Room 113 Mrs Barber	Wednesday lunchtime Room 112 Mrs Totton
Chemistry	Thursday lunchtime Room 208 Mr Paxton		
Physics	Monday lunchtime Room 218 Mr Woolhouse	Tuesday lunchtime Room 218 3.20 – 4.00 pm	Wednesday Week 2 Room 218 3.20 – 4.00 pm

## **USEFUL LINKS:**

- Boundless Science (Stretch and challenge)
- <https://courses.lumenlearning.com/boundless-biology/>
- <https://courses.lumenlearning.com/boundless-chemistry/>
- <https://courses.lumenlearning.com/boundless-physics/>

## **RECOMMENDED RESOURCES / REVISION GUIDES:**

- Grade 9-1 GCSE Biology: OCR Gateway Revision Guide (CGP GCSE Biology 9-1) by CGP Books
- Grade 9-1 GCSE Chemistry: OCR Gateway Revision Guide with Online Edition (CGP GCSE Chemistry 9-1) by CGP Books
- Grade 9-1 GCSE Physics: OCR Gateway Revision Guide with Online Edition (CGP GCSE Physics 9-1) by CGP Books

OCR Gateway GCSE Biology Student Book by Jo Locke

OCR Gateway GCSE Chemistry Student Book by Nigel Saunders

OCR Gateway GCSE Physics Student Book by Helen Reynolds

## **EXAM BOARD**

OCR Gateway Science

## **FEEDBACK POLICY**

The key purpose of feedback is to promote learning and growth. A wide array of formal and informal assessment methods are used as part of the learning process, all of which are designed to promote independent learning enabling students to take the next steps to improve.

Formative Assessment will take place during day to day classroom practice. There will be opportunities for students to receive immediate feedback which is a key aspect of effective assessment in English and Science. They include:

- peer- and self- assessment;
- verbal feedback from the teacher;
- question and answer opportunities;
- mini-plenaries that review and identify learning during and at the end of lessons;
- quizzes to test understanding of a topic.

Exercise books will be used for a combination of note-making, drafting and examination-style responses. A minimum of one major piece of work will be assessed every half term. However, other tasks will be marked at the teacher's discretion. Students are expected to respond to feedback and act on it as it is only through a willingness to improve and try new ways of doing things that progress can be made.

**“Working together to achieve our personal best”**