



SCIENCE DEPARTMENT

Curriculum Overview



The curriculum of the school reflects the demands of the National Curriculum. It is designed in order to provide all pupils with a broad, balanced education relevant to their needs both now and in the future.

Departmental Overview

The Science Department comprises 12 specialist teachers, 5 science laboratories, 5 teaching classrooms and 1 computer suite. There are also 3 laboratory preparation rooms, stocked with a wide range of equipment designed to support students in their learning. The department also has access to 2 class sets of iPads for independent research and 1 bank of laptops for data analysis and report writing. The department's key aims are to develop a passion for Science within our students, allowing them to access a wide range of specialist careers whilst developing scientific literacy for all alongside highly sought after analytic and problem solving skills to enhance employability across the board.

Departmental Staff

Mr R Clark	Head of Department
Mrs K Forrest	Head of Biology
Mrs N Kitts	Head of Chemistry
Mr C Slater	Head of Physics
Miss R Dudley	Science Teacher
Mr D Feeney	Science Teacher
Mr P Evans	Science Teacher
Miss E Tilston	Science Teacher
Miss K Ley	Science Teacher
Mrs N Leybourne	Science Teacher
Mr R MacKenzie	Science Teacher
Miss F Cannon	Science Teacher
Mr K Hall	Senior Laboratory Technician
Mrs J Riley	Science Support
Miss R Dudley	SLT Line Manager

Year 7 Science (KS3)

Examination/Specification Board

Activate KS3 Science (Oxford University Press)

Curriculum Overview

Term 1

Biology – Cells
Chemistry – Particles

Physics - Forces

Term 2

Biology – Body Systems
Chemistry – Elements, compounds and separation techniques.

Physics - Sound

Term 3

Biology – Reproduction
Chemistry – The periodic table

Physics – Light

Throughout all units students will be encouraged to develop their skills in areas such as drawing graphs, data interpretation and an introduction to the scientific method. Students will regularly participate in practical work with the aim of developing their skills in the laboratory. In Year 7 this work focus upon the safe use of equipment, making accurate measurements and testing predictions.

Examinations/Key Assessments

Students will be assessed on the 1-9 scale at the end of every topic, and are encouraged to monitor their own progress towards their target grade. There is also an end of year test in the summer term which covers all nine topics and is used to measure the student's progress towards their end of year target grade.

Homework

Homework is set at least once every two weeks, and may be set up to one per week. Often homework takes the form of multiple choice quizzes to reinforce learning from class at home. Additionally, homework will be set to review notes and revision materials before class tests. All homework is available to view through Show My Homework.

How Parents can Help

- Check that your son records his homework and the dates of the Science module tests.
- Ensure through the use of Show My Homework that your son is completing the quizzes set by his Science teacher.
- Ask your son to explain to you what he is learning about in his Science lessons.
- Encourage your son to watch scientific programmes on television, read about scientific events in newspapers and visit scientific sites on the internet.

Year 8 Science (KS3)

Examination/Specification Board

Activate KS3 Science (Oxford University Press)

Curriculum Overview

Term 1

Biology – Health and Lifestyle

Chemistry – Acids, Alkalis and Reactions

Physics – Electricity and Magnetism

Term 2

Biology – Ecosystem Processes

Chemistry – Metals and Acids

Physics - Energy

Term 3

Biology – Adaptation and Inheritance

Chemistry – The Earth

Physics – Motion

Throughout all units students will be encouraged to develop their skills in areas such as drawing graphs, data interpretation and use of the scientific method. Students will regularly participate in practical work with the aim of developing their skills in the laboratory. In Year 8 this work focus upon the use of advanced equipment, making accurate measurements and testing a hypothesis.

Examinations/Key Assessments

Students will be assessed on the 1-9 scale at the end of every topic, and are encouraged to monitor their own progress towards their target grade. There is also an end of year test in the summer term which covers all nine topics and is used to measure the student's progress towards their end of year target grade.

Homework

Homework is set at least once every two weeks, and may be set up to one per week. Often homework takes the form of multiple choice quizzes to reinforce learning from class at home. Additionally, homework will be set to review notes and revision materials before class tests. All homework is available to view through Show My Homework.

How Parents can Help

- Check that your son records his homework and the dates of the Science module tests.
- Ensure through the use of Show My Homework that your son is completing the quizzes set by his Science teacher.
- Ask your son to explain to you what he is learning about in his Science lessons.
- Encourage your son to watch scientific programmes on television, read about scientific events in newspapers and visit scientific sites on the internet.

Year 9/10/11 Separate Science (KS4)

Examination/Specification Board

AQA Biology, AQA Chemistry, AQA Physics

Curriculum Overview

Students will learn about Life and Living Things, Chemical Reactions and Physical Processes both long established and the most recent and up to date findings in the Scientific field. They will apply this learning to day to day life and look at modern areas of Scientific development and concern. Topic lists are shown below.

Biology

B1: Cells
B2: Organisation
B3: Infection and control
B4: Bioenergetics
B5: Homeostasis and response
B6: Reproduction
B7: Evolution
B8: Ecology

Chemistry

C1: Atomic structure
C2: The periodic table
C3: Structure and bonding
C4: Chemical changes and separating techniques.
C5: Organic chemistry
C6: The Earth
C7: Chemical calculations
C8: Energy changes, rates and equilibrium.
C9: Electrolysis

Physics

P1: Energy
P2: Particles
P3: Forces
P4: Motion
P5: Electricity
P6: Electromagnetism
P7: Waves
P8: Nuclear Physics
P8: Astrophysics

Examinations/Key Assessments

The new guidelines mean that all external exams will be taken at once at the end of the course. There are no resit opportunities available. External assessment (100%) Biology, Chemistry and Physics will be assessed with 2 papers of 105 minutes for each discipline. Each subject paper is worth 50% and has 100 marks available.

Homework

Each subject will set one homework task per week. All homework is set via Show My Homework and usually takes the form of multiple choice quizzes to reinforce learning outside the classroom. Additionally, homework will be set to review notes and revision materials before class tests. As students are studying for their GCSE examinations, homework will often be in the form of a past paper to be taken home and completed. All homework is available to view through Show My Homework. Students should also supplement their homework by working through the revision guide, creating flashcards and min-maps for each topic so that revision is an ongoing process.

How Parents can Help

- Check that your son records his homework and the dates of the Science module tests.
- Encourage your son to watch scientific programmes on television, read about scientific events in newspapers and visit scientific sites on the internet.
- Revision guides will be made available at cost price from the Science department. These should be purchased at the beginning of the course.
- Contact the Science department anytime you have queries or concerns regarding your son's progress.
- Encourage your son to attend the revision classes on Wednesday mornings and Friday nights which start in October and run through the year.

Year 9/10/11 Combined Science (KS4)

Examination/Specification Board

AQA (Trilogy)

Curriculum Overview

Students will learn about Life and Living Things, Chemical Reactions and Physical Processes both long established and the most recent and up to date findings in the Scientific field. They will apply this learning to day to day life and look at modern areas of Scientific development and concern. Topic lists are shown below.

Biology

B1: Cells
B2: Organisation
B3: Infection and control
B4: Bioenergetics
B5: Homeostasis and response
B6: Reproduction
B7: Evolution
B8: Ecology

Chemistry

C1: Atomic structure
C2: The periodic table
C3: Structure and bonding
C4: Chemical changes and separating techniques.
C5: Organic chemistry
C6: The Earth
C7: Chemical calculations
C8: Energy changes, rates and equilibrium.
C9: Electrolysis

Physics

P1: Energy
P2: Particles
P3: Forces
P4: Motion
P5: Electricity
P6: Electromagnetism
P7: Waves
P8: Nuclear Physics

Examinations/Key Assessments

The new guidelines mean that all external exams will be taken at once at the end of the course. There are no resit opportunities available. External assessment (100%) - 6 exam papers; 2 biology, 2 chemistry, 2 physics. All of the papers are 75 minutes long, each weighted as 16.7% of the final grade.

Homework

Homework is set at least once every two weeks, and may be set up to one per week. All homework is set via Show My Homework and usually takes the form of multiple choice quizzes to reinforce learning outside the classroom. Additionally, homework will be set to review notes and revision materials before class tests. As students are studying for their GCSE examinations, homework will often be in the form of a past paper to be taken home and completed. All homework is available to view through Show My Homework. Students should also supplement their homework by working through the revision guide, creating flashcards and min-maps for each topic so that revision is an ongoing process.

How Parents can Help

- Encourage your son to watch scientific programs on television, read about scientific events in newspapers and visit scientific sites on the internet.
- Check that homework is being completed regularly to consolidate learning.
- Revision guides will be made available at cost price from the Science department. These should be purchased at the beginning of the course.
- Please contact us anytime you have queries or concerns regarding your son's progress.
- Encourage your son to attend the revision classes on Wednesday mornings and Friday nights which start in October and run through the year.

Year 12/13 Biology (KS5)

Examination/Specification Board

AQA Biology

Curriculum Overview

Biology is an exciting and ever changing field of study which can offer you many challenges and rewards. In A Level Biology you will cover dynamic and exciting topics such as; cell Biology, the functioning of living organisms and genetics and DNA. Studying Biology at A Level offers you many possible career options. Medicine, Dentistry, Nursing, Physiotherapy and Pharmacy all have a basis in A Level Biology. A Level Biology is taught by Mrs Forrest and Mr Evans.

Examinations/Key Assessments

Your A Level Biology studies will culminate in written exams. The development of your practical skills will be monitored and endorsed by your teacher and your knowledge and understanding of practical biology will be tested in the written exams. There is also a Practical Skills Verification (PSV) that you will work towards completing during your course, which is included on the certification document and is a requirement for some university courses.

Homework

One homework task will be set per week and may take up to 2 hours to complete. The majority of homework is set online via Show My Homework. Other homework tasks will involve extended investigations and research. Students are expected to supplement their homework for 2-3 hours per week both at home and in study sessions by consolidating their learning using the textbooks provided by the Science department, the internet and revision guides.

How Parents can Help

- Encourage your son/daughter to watch scientific programs on television, read about scientific events in newspapers and visit scientific sites on the internet.
- Check that homework is being completed regularly to consolidate learning.
- Ensure that your son has a quiet area to study free from distractions.
- Encourage your son/daughter to attend university open days and order prospectus documents to develop a clear vision of where they want to go after completion of their studies.
- Revision guides will be made available at cost price from the Science department. These should be purchased at the beginning of the course.

Year 12/13 Chemistry (KS5)

Examination/Specification Board

AQA Chemistry

Curriculum Overview

Chemistry is the study of the world around us, from the smallest atom to life saving medicines. You will explore the fundamental principles that form the basis of chemistry such as atomic structure, bonding, periodicity and an introduction to organic chemistry. Students also look at the applications of these principles. You will also develop further the concepts and principles introduced at AS through topics; including equilibria, polymers, aromatic chemistry, thermodynamics, energetic chemistry and inorganic chemistry. A Level Chemistry is taught by Mrs Kitts.

Examinations/Key Assessments

Assessment of A Level Chemistry is designed to be rigorous, while maintaining fair and balanced question papers. This includes testing synoptic understanding, knowledge of how science works and providing stretch and challenge. For this course, 100% of the content is assessed by exam, 20% of the overall assessment will contain mathematical skills and at least 15% will assess knowledge, skills and understanding in relation to practical skills. There is also a Practical Skills Verification (PSV) that you will work towards completing during your course, which is included on the certification document and is a requirement for some university courses.

Homework

One homework task will be set per week and may take up to 2 hours to complete. The majority of homework is set online via Show My Homework. Other homework tasks will involve extended investigations and research. Students are expected to supplement their homework for 2-3 hours per week both at home and in study sessions by consolidating their learning using the textbooks provided by the Science department, the internet and revision guides.

How Parents can Help

- Encourage your son/daughter to watch scientific programs on television, read about scientific events in newspapers and visit scientific sites on the internet.
- Check that homework is being completed regularly to consolidate learning.
- Ensure that your son has a quiet area to study free from distractions.
- Encourage your son/daughter to attend university open days and order prospectus documents to develop a clear vision of where they want to go after completion of their studies.
- Revision guides will be made available at cost price from the Science department. These should be purchased at the beginning of the course.

Year 12/13 Physics (KS5)

Examination/Specification Board

AQA Physics

Curriculum Overview

Physics is the study of our universe. Throughout this course you will develop an understanding and appreciation of the mechanics of our universe. You will research issues that have a huge impact on our society today including Nuclear Physics and Quantum Mechanics. Physics is a highly sought after qualification and one which opens the door to a number of careers such as Medicine, Engineering, Dentistry, Optics and Teaching. A Level Physics is taught by Mr Clark and Mr Mackenzie.

Examinations/Key Assessments

Assessment of A-level Physics is designed to be rigorous, while maintaining fair and balanced question papers. This includes testing synoptic understanding, knowledge of How Science Works and providing stretch and challenge. The course is assessed through three exam papers which cover the entire programme of study as well as assessing practical skills and techniques practiced during your sixth form lessons. There is also a Practical Skills Verification (PSV) that you will work towards completing during your course, which is included on the certification document and is a requirement for some university courses.

Homework

One homework task will be set per week and may take up to 2 hours to complete. The majority of homework is set online via Show My Homework. Other homework tasks will involve extended investigations and research. Students are expected to supplement their homework for 2-3 hours per week both at home and in study sessions by consolidating their learning using the textbooks provided by the Science department, the internet and revision guides.

How Parents can Help

- Encourage your son/daughter to watch scientific programs on television, read about scientific events in newspapers and visit scientific sites on the internet.
- Check that homework is being completed regularly to consolidate learning.
- Ensure that your son has a quiet area to study free from distractions.
- Encourage your son/daughter to attend university open days and order prospectus documents to develop a clear vision of where they want to go after completion of their studies.
- Revision guides will be made available at cost price from the Science department. These should be purchased at the beginning of the course.

Year 12/13 Applied Science (KS5)

Examination/Specification Board

EDEXCEL (BTEC)

Curriculum Overview

Science is the study of the world around us; throughout this course you will develop your skills as a scientist and gain an understanding of industrial science. You will acquire new practical skills required for the scientific industry. This sector is highly varied and diverse. You will become familiar with different aspects of industry including, Food and Drink, Sports Science, Genetic engineering and Medical Sciences. Students completing their BTEC Nationals in Applied Science will be aiming to go on to employment, often via the stepping stone of higher education. A qualification in Applied Science can lead to study at university in Sports Science, Science and Football, Nursing, Natural Sciences, Sports Psychology and Applied Psychology. You will also have the skills necessary to train as a laboratory technician in large pharmaceutical companies, hospitals, universities and schools.

Examinations/Key Assessments

You will complete 6 units in total, of which 58% is externally assessed by examination. The remaining content is assessed by the completion of a coursework portfolio.

Homework

Each subject will set one homework task per week. The majority of homework is set online via Show My Homework. Other homework tasks will involve extended investigations and research.

How Parents can Help

- Encourage your son/daughter to watch scientific programs on television, read about scientific events in newspapers and visit scientific sites on the internet.
- Check that homework is being completed regularly to consolidate learning.
- Revision guides will be made available at cost price from the Science department. These should be purchased at the beginning of the course.