Department: Science

Head of Department: Ms Padda

Curriculum Intent

Riverside School's Science department inspires students to explore the world they live in and the scientific principles that govern it. At the heart of our curriculum we seek to ensure that all students, regardless of their starting point, are able to master threshold concepts and thus allow them to develop a deeper understanding of the central ideas of science. The curriculum is designed to build upon key skills and knowledge over time that culminate in a well-rounded scientist.

Our essential wider curriculum, including trips, workshops, competitions and access to careers advice, serves to provide our students with an appreciation of the application of science beyond the classroom. Our clubs allow our students to innovate ideas, think critically and hone their research skills. By relating their knowledge to research and developments, our students understand the importance of scientific inquiry and leave us as scientifically-literate young adults. Our students are therefore equipped for personal decision making, participation in civic and cultural affairs and so can be active members of society.

Year 7 Topics

- Cells
- Solids, Liquids and Gases
- Forces
- Respiration
- Atoms, Elements and Compounds
- Energy
- Digestion
- Chemical Reactions
- Electricity
- Scientific Investigation

Year 8 Topics

- Plants and Ecology
- Separating Techniques
- Healthy Eating
- Heat Transfer and Particle Theory
- Health and Disease
- Chemical Reactions II
- Waves and Space
- Variation and Reproduction

- Earth
- Magnetism and Generating Electricity
- Scientific Investigation

Year 9 Topics

- Forces
- Atomic Structure
- Cell Biology
- Energy
- Bonding and Structure
- Organisation and Hierarchy
- Electricity
- Quantitative Chemistry
- Particle Model

Year 10 Topics

- Chemical Changes
- Infection and Response
- Bioenergetics
- Atomic Structure
- Energy Changes
- Rates of Reaction
- Organic Chemistry
- Homeostasis

Year 11 Topics

- Chemical Analysis
- Waves
- Inheritance
- Magnetism
- Chemistry of the Atmosphere
- Using resources
- Space Physics (triple science only)

Specification details and assessment

AQA GCSE Combined Science: Trilogy (8464)

or

AQA GCSE Biology (8464), GCSE Chemistry (8462) and GCSE Physics (8463)

Assessment is through terminal examinations. In Combined science all students will sit six exam papers lasting 1hr 15mins each accounting for 16.7% of the mark towards the final two GCSE grades. In Separate science, each of the three GCSEs is assessed by two 1hr 45min exams accounting for 50% of the grade.

Students will be supported through regular teacher marking and feedback as well as regular assessments and mock exams. They will regularly be supplied with past examination questions and taught how to structure their revision notes.

Requirements

This is a compulsory subject until the end of year 11.

Key Stage 5 Overview

Subject: Biology

This course is designed for students who are interested in studying the principles of living organisms and how they interact with the environment around them.

Course Content

Students will follow AQA Biology (7402) and there are eight core units of content studied over the two years:

1. Biological molecules
2. Cells
3. Organisms exchange substances with their environment
4. Genetic information, variation and relationships between organisms
5. Energy transfers in and between organisms
6. Organisms respond to changes in their internal and external environments
7. Genetics, populations, evolution and ecosystems
8. The control of gene expression

Specification Details and Assessment:

https://filestore.aqa.org.uk/resources/biology/specifications/AQA-7401-7402-SP-2015.PDF

Subject: Chemistry

This course is designed for students who are interested in studying substances; what they are made of, how they interact with each other as well as their role in living things.

Course Content

Students will follow OCR Chemistry A (H432) and there are six core units of content studied over the two years:

1. Development of practical skills in chemistry
2. Foundations in chemistry
3. Periodic table and energy
4. Core organic chemistry
5. Physical chemistry and transition elements
6. Organic chemistry and analysis

Specification Details and Assessment:

https://www.ocr.org.uk/Images/171720-specification-accredited-a-level-gce-chemistry-a-h432.pdf

Subject: Physics

This course is designed for students who are interested in the fundamental nature of almost everything that we know, ranging from the smallest matter to distant space.

Course Content

Students will follow OCR Physics A (H556) and there are six core units of content studied over the two years:

1. Development of practical skills in physics
2. Foundations in physics
3. Forces and motion
4. Electrons, waves and photons
5. Newtonian world and astrophysics
6. Particles and medical physics

Specification Details and Assessment:

https://www.ocr.org.uk/Images/171726-specification-accredited-a-level-gce-physics-a-h556.pdf

SMSC (spiritual, moral, social and cultural development + extracurricular links)

Many areas of science encourage our students to consider moral and ethical arguments and develops their ability to consider the social implications of study in the world around us. Topics such as embryonic screening, stem cells, sustainability of resources, renewable energy and the

greenhouse effect teach our students of the ever increasing pressures of a growing population and advancements in science and the different sides of the arguments that may exist. We aim to teach our students to dissect and evaluate information in order to make informed judgements.

Staff Contact: Ms Padda
Email: riverside@riverside.bardaglea.org.uk