SUBJECT: Combined Science **YEAR:** 10 & 11

HEAD OF DEPARTMENT: Mr Griffiths

GROUPING POLICY: One class GCSE target 5+, other classes mixed ability

EXAM BOARD: AQA

ASSESSMENT: 100% External Examination

COURSE CONTENT

Link to Specification:

Students follow the AQA GCSE Science Trilogy course. This is examined at the end of Year 11.
http://www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464

Curriculum Intent

Students follow the AQA Combined Science Trilogy course. This course has been chosen for a number of reasons:

- The course leads on well from our Key Stage Three course, which although 'in house' is based on the AQA Key Stage Three scheme of work.
- AQA makes considerable efforts to make examination papers accessible to students by considering reading age and layout, and this is important for our cohort.
- There is good support from AQA in terms of online resources and regular 'Hub' meetings.
- The majority of schools in Gloucestershire follow the AQA syllabus, which means that there is good support locally through Heads of Science meetings.
- We study the same examination board for Combined Science, Entry Level and Triple Science. This means that there is some consistency of expectation for staff, which enables students to switch between courses, and allows us to introduce all three courses in Year 9.. The major reason for choosing Trilogy over Synergy is so that we can transfer students more easily between the Triple Science and Combined Science courses.

We begin the course in term 5 of Year 9. The reason for this is that we can comfortably deliver all of the Key Stage Three knowledge needed to provide a firm base for GCSE study before the end of year 9. Beginning the course earlier means that we can spend more time developing ideas and allows us to finish slightly earlier for revision. Triple science is delivered in 2 different formats at Rednock.

Route 1 (Higher Tier focus) - Designed for students who have a GCSE target grade of 5+ but also available to other students who we feel have the potential to sit the higher tier exams in the summer of year 11.

What will my child learn?

Year 10

In Year 10 students will study the first half of the GCSE course, covering all three areas of Science. They will have two teachers, a main teacher who will teach two of the science subjects, and a second teacher who will teach the third science subject throughout the year.

Biology

1. **Cell biology:** what are cells, what are they made of and how do they divide?
2. **Organisation:** how are cells organised into structures such as the heart?
3. **Infection and response:** how do bacteria and viruses cause disease?
4. **Bioenergetics:** students will study how plants and animals generate energy.

Chemistry

1. **Atomic structure and the periodic table:** what is the structure of an atom and how was this discovered?
2. **Bonding, structure and the properties of matter:** how are atoms arranged into the molecules that make up the world around us?
3. **Quantitative chemistry:** how can chemists predict how much of a substance they will make?
4. **Chemical changes:** students will learn about different types of chemical reactions.
5. **Energy changes:** students will learn about how and why chemical reactions happen; why does burning a fuel create heat, for example?

Physics

1. **Energy:** what is energy? How and why is it transferred?
2. **Electricity:** how do electrical circuits behave? How is electricity generated?
3. **The particle model of matter**: how do atoms and molecules behave in solids, liquids and gases? What happens when their temperature changes?
4. **Atomic structure:** everything in the universe is made of atoms; students will learn about their structure and how they were discovered.

Year 11

- **Biology -** Homeostasis and response, Inheritance, Variation and evolution and Ecology.
- **Chemistry -** The rate and extent of chemical change, Organic chemistry, Chemical analysis, Chemistry of the atmosphere, Using resources.
- **Physics –** Forces, Waves, Magnetism and electromagnetism.

Route 2 - Designed for students with a target grade of 1-5 and have been identified that they will be sitting the foundation tier exams in the summer in year 11.

For some students we approach the GCSE through a different route: students sit the AQA Entry Level Science certificate in Year 10 to build confidence, revision techniques and scientific skills. They then add to their knowledge in Year 11 and sit the full GCSE. The content studied is exactly the same but falls in a slightly different order.

What will homework look like?

Students will have one homework per week from their main teacher and one homework per fortnight from their second teacher. Flipped learning opportunities will also be available to students following this route.

What enrichment opportunities are available?

Appropriate enrichment opportunities will be arranged and communicated to students as the course progresses.

ASSESSMENT

How will my child's work be assessed?

Students will be assessed formally by each teacher in every reporting cycle; the test will be common to the whole cohort. Students will be given 1-9 grades for these tests. We will also use mathematical techniques to track students' progress against prior attainment. All of those who we judge not to be progressing as we expect will be invited to attend a retest in the first instance, and then considered for additional support. In addition, students' progress will be assessed continuously through their classwork, homework and smaller in-class tests.

Practical skills will be developed through 'required practicals' set by the exam board. These are examined formally in the written examinations at the end of Year 11, however, students will need to have experienced the class practicals in order to answer the questions. Students who miss the practicals will be asked to catch up, and invited for additional support after school if they do not or cannot do this themselves.

Examinations will be at the end of Year 11. There are six papers: two biology, two chemistry and two physics, each worth 16.7% of the final qualification. Each of the papers will assess knowledge and understanding from distinct topic areas.

ADDITIONAL INFORMATION

How can I support my child in this subject?

- Be positive about learning Science when speaking to your child, whatever your personal experience of Science was.
- Discuss what your child is learning in Science with them; get them to explain everyday phenomena to you. Draw their attention to and discuss scientific advances that are reported in the news.
- Your child should receive homework weekly – please insist that this is completed to a good standard. If you are able to, help your child to complete the homework. If they are stuck, encourage them to contact their teacher, who will be happy to help.
- Look through your child's Science book with them. Discuss the feedback they have received and how they can improve. Ask them to show you work that they are interested in or proud of.
- Encourage and help them to learn key words and formulae.
- Encourage them to use the resources accessible from the school website.

How can I support my child with exams?

- Upcoming tests will be published on SatchelOne. Help them to identify the material they need to revise, using the revision lists they are given.
- Revision sessions will take place before each test and publicised on SatchelOne. Please encourage your child to attend.
- Help your child to plan their revision – a little, often is much better than cramming.
- Try to encourage your child to revise actively by condensing their notes, making mind maps, and making revision cards. Ask them to identify specifically what they are learning then test them on it.