**Subject**: Science

**Head of faculty**: Mr Davis

**Staff**: Mr Hook, Mrs Leonard, Mrs Hayes, Mr Griffiths, Mrs Aamir, Miss Baber, Mr Muhiddin, Miss Vellenoweth, Mr Commander, Miss Harding.

**Introduction and ethos of subject**

Students at WCSA follow the AQA synergy 9-1 specification for year 7-11. Students in KS3 have three science lessons per week whereas students in KS4 have 5 lessons, with the exception of students taking triple science as an option who receive additional teaching hours to cover the increase content and extra GCSE.

At GCSE, our students cover biology, chemistry and physics as either Combined Science or Triple Science. At all key stages, lessons will consist of theory and practical activities with an emphasis on applying knowledge, and developing exam and practical skills as set out by the AQA exam board.

**Our Ethos:**

‘Our hope is to inspire students about our subject and empower them to learn independently and constantly ask questions about the world around them.’

**KS3**

Students in KS3 are taught a bespoke curriculum covering broad range of topics across biology, chemistry and physics. Lesson offer plenty of opportunities for practical work allowing for the development of scientific skills and team work. Students complete ‘required’ practical’s to match the expectation of the 9-1 GCSEs, and teacher assessment allows students to refine their skills and understanding following these lessons.

Each topic has an end of topic assessment consisting of multiple choice and long answer questions. Assessments have been written in line with the new GCSEs which test understanding of key concepts, application of knowledge, and skills used in required practical lessons.

Within each learning cycle, students in KS3 will also work through scientific skills lessons where they continue to develop their ability to ‘think and work like a scientist’. These lessons will focus on areas such as: graph work, maths skills and asking scientific questions.

The topics covered in Year 8:

* Health and disease
* Respiration
* Environment
* Genetics
* Acids and bases
* Speed
* Magnetism

The topics covered in Year 7:

* Cells
* Interdependence
* Reproduction
* Matter
* Elements and compounds
* Energy
* Forces
* Electricity

**KS4**

Our students are following the AQA synergy 9-1 specification/ Lessons consist of theory and practical work where students are testing regularly on their knowledge of key concepts, and their practical skills.

Students in KS4 continue to develop and refine skills and understanding acquired from years 7,8 and 9 by delving deeper into the topics covered earlier in their school life.

Further support for students in year 11 is offered on Wednesdays as part of the P6i programme. In these sessions’ students receive additional support and guidance across the three science from science staff with additional focus on exam skills and technique.

Students in year 11 will be given a GCP revision guide from the science department to aid their revision and work in class.

**Enrichment opportunities**

We run ‘science club’ as a period 6 on Wednesdays which provides additional opportunities for students to participate in practical activities and refine their skills. Each year we run science competitions such as ‘science fair’ and ‘art in science’ to encourage students to experience science in a different context. Many students participating in these competitions will have the opportunity to spend the afternoon at the University of Bristol.

In years 7-11 we offer Science, Technology, Engineering and Mechanics trips for chosen students. These trips provide students with an opportunity to participate in workshops focussing on many areas of science.

**Learning cycles**

Students in KS3 will complete two topics per learning cycle. This will be a combination of biology, chemistry or physics. Upon completion of each topic, students will be expected to complete an assessment followed by review working targeting areas for improvement.

Students in KS4 are taught by two teachers according to subject specialisms and will complete up to three topics per cycle depending on the length. Each topic will finish with an assessment using GCSE style questions from past paper examinations. Upon completion of each topic, students will be expected to complete an assessment followed by review working targeting areas of improvement.

**Home learning**

Home learning for years 7-10 are set once per week using Doddle which is an online platform. This website can be accessed through [www.doddlelearn.co.uk](http://www.doddlelearn.co.uk). Students will be expected to complete weekly skills or knowledge quizzes to a percentage appropriate to their target. Whereas students in KS3 will be set 1 piece of homework each week, KS4 students will be expected to complete two pieces ; one from each of their teachers.

Students in year 11 are issued with CGP revision guides at the start of the year. Each week they will be expected to make revision notes, resources or answer exam style questions on a range of subjects they have covered to date.

**Career links**

Forensic science, anthropology and archaeology.

Teaching and psychology

Engineering, mechanics, construction and design.

Biochemistry, medicine, biomedical science, pharmaceuticals and physiotherapy.

Ecology, geology, conservation

Meteorology and astrology

Microbiology and toxicology

To learn more about careers relating to this specific subject, please click the link below:

<http://www.careerpilot.org.uk/job-sectors/subjects>

In addition to the careers work delivered in class, the school offers a wide range of careers related events and activities throughout the year including:

* Themed assemblies including visits from colleges, universities, apprenticeships, employers and previous students to explore career pathways.
* Collapsed curriculum days – college and university taster days to help our students plan their studies beyond school.
* Mock interviews to build confidence and employability skills.
* Guest speakers and tutor time drop-ins to meet employers, education providers, previous students and representatives from other organisations in an informal setting.
* Work experience week to help our year 10 students build their confidence, their employability skills and their work awareness.
* Job of the week information delivered in tutor time to encourage students to explore different pathways and the skills and qualifications required.
* College, 6th form and university open evenings to help students and their families explore options beyond school.

The careers office is open during school time Monday to Friday and is available for students to visit and talk through their ideas. Specific one to ones can be booked but students can drop in at any time. The careers office is located in the LRC next to student services.

**WCSA curriculum Map 2018/19**

**Subject – Science - KS3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Cycle 1** | **Cycle 2** | **Cycle 3** | **Cycle 4** |
| **Year 7** | Title: Matter/Forces  **Assessment focus: Particle model, states of matter, separating techniques, forces, Hooke’s Law, weight, moments**  **Homework focus: changes in state, chromatography, balanced/unbalanced forces, drag forces** | Title: Cells/Energy  **Assessment focus: Plant and animal cells, microscopes, DNA, energy types, energy transfer, fuels**  **Homework focus: kinetic energy, gravitational potential energy, specialised cells** | Title: Interdependence/Elements and compounds  **Assessment focus: periodic table, alloys, chemical changes**  **Homework focus: physical changes, reactivity series** | Title: Reproduction/ Electricity  **Assessment focus: Fertilisation, growth, reproduction, circuit symbols, current and voltage, resistance**  **Homework focus: contraception, puberty, current and voltage in series and parallel circuits** |
| **Year 8** | Title: Magnetism/Health and Disease  **Assessment focus: Magnetism, electromagnets, motors and generators, nervous system, the heart, microorganisms**  **Homework focus: energy resources, scientific skills, blood, disease** | Title: Respiration/ Environment  **Assessment focus: respiration, breathing food and diet, combustion, extracting metals, plastics**  **Homework focus: digestion, enzymes, asthma, human impact, atmosphere** | Title: Acids + bases/ Waves  **Assessment focus: Acids, bases, metals, pH, waves, EM spectrum, reflection**  **Homework focus: neutralisation, health and safety, colours and filters, sound waves** | Title: Genetics/ Speed  **Assessment focus: Variation, DNA, natural selection, forces, speed, stopping distances**  **Homework focus: evolution, species, nature and nurture, car safety, gravity and drag** |

**WCSA curriculum Map 2018/19**

**Subject – Science - KS4**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Cycle 1** | **Cycle 2** | **Cycle 3** | **Cycle 4** |
| **Year 9** | **Triple: cell biology, structure of atom, chemical bonds, energy**  **Double: Cells, systems**  **Homework focus: doddle linked to lessons** | **Triple: organisation, quantitative chemistry, chemical changes, waves**  **Double: Plants, matter**  **Homework focus: doddle linked to lessons** | **Triple: Plants, infection and response, energy changes, rates, maths in science**  **Double: maths in science, periodic table, bonding**  **Homework focus: doddle linked to lessons** | **Triple: bioenergetics, skills in science**  **Double: forces and motion, skill sin science**  **Homework focus: doddle linked to lessons** |
| **Year 10** | **Triple: homeostasis, maths in science, organic chemistry, forces, motion**  **Double: atomic structure, waves, chemical quantities**  **Homework focus: doddle linked to lessons** | **Triple: genetics, chemical analysis, magnetism, electricity**  **Double: forces and energy, lifestyle and health.**  **Homework focus: doddle linked to lessons** | **Triple: cell biology (review), chemistry of atmosphere, rates, particle model, atomic structure**  **Double: magnetism, preventing and treating diseases.**  **Homework focus: doddle linked to lessons** | **Triple: organisation (review), plant tissues (review), structure of atom, space, energy**  **Double: electricity, rates, acids and alkalis**  **Homework focus: doddle linked to lessons** |
| **Year 11** | **Triple: Ecology, using resources, reviewing past topics.**  **Double: earth’s atmosphere, ecosystems**  **Homework focus: exam style questions, resources, notes and doddle** | **Triple: reviewing past topics.**  **Double: atoms into ions, carbon chemistry**  **Homework focus: exam style questions, resources, notes and doddle** | **Triple: reviewing past topics.**  **Double: resources, genetics**  **Homework focus: exam style questions, resources, notes and doddle** | **Triple: reviewing past topics.**  **Double: Reviewing past topics** |