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| Subject: Science Year 7 Curriculum Map 2022-2023 |
| Terms | **Topics covered** and **core knowledge and skills** | Links to careers | Links to the Knowledge organiser and other additional resources |
| Term 1 | **Introduction to Science*** State the main safety rules when working in a science lab.
* Identify hazard symbols.
* Identify hazard, risks and controls on a risk assessment.
* Identify scientific equipment from diagrams.
* Be able to select appropriate science equipment.
* Set up and use a Bunsen burner safely.
* Focus a slide using a microscope.
* State different SI units.
* Describe the three different types of variables.
* Draw an appropriate results table.
* Calculate a mean average.
* Plot a bar and line graph.
* Write a prediction.
* Write a conclusion.

**Microbiology*** State jobs someone with a degree in microbiology could do.
* Draw and label an animal & plant cell.
* Describe the functions of sub-cellular structures.
* State examples of specialised cells and describe how they are specialised.
* Label the main parts of a microscope.
* Calculate total magnification & magnification.
* Compare light & electron microscopes.
* Correctly order the structures of the body.
* State the different structures within a leaf.
* State factors plants need for growth.
* Write the word equation for photosynthesis.
* Label the main structures within a flower.
* State what pollination is and describe the two examples.
* State what happens during fertilisation in plants.
* State different methods of seed dispersal.
* Describe what germination is.

 **Chemical Engineering*** State jobs within the chemical engineering career pathway.
* Define the key terms ‘element,’ ‘mixture,’ and ‘compound.’
* Label a simple diagram of an atom.
* Recall key steps in the development of the model of the atom.
* Identify properties of solids, liquids, and gases.
* Represent the particles in solids, liquids, and gases in diagrams.
* Sketch a graph of energy supplied against temperature for a substance undergoing a change of state.
* Describe the movement of particles in a solid, liquid, or gas.
* Explain diffusion and Brownian motion in terms of particles.
* Define solubility.
* Recall factors that affect solubility.
* Identify observations that are signs of a chemical reaction occurring.
* Describe the arrangement of elements on the Periodic Table.
* Describe some trends in groups 1 and 7 on the Periodic Table.
* Describe some common properties of metals and non-metals.
* Use diagnostic tests to identify an unknown gas.
* Describe the structure of alloys.
* Identify some properties of alloys, comparing them to elemental metals.
 | Microbiology careers[Chemical Engineering](https://www.prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/chemical-engineering) | <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Year-7-Into-to-sci-KO.pdf><https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Chemical-Engineering-KO.pdf><https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Microbiology-KO.pdf> |
| Term 2 | **Rollercoaster Engineering*** State jobs within the engineering sector, specific to the design of rollercoasters.
* Categorise forces as ‘contact’ and ‘non-contact.’
* Represent forces using scaled arrows.
* Find resultant forces.
* Identify the effects of forces.
* Describe factors that affect the size of resistive forces.
* Suggest ways to increase or decrease friction between two surfaces.
* Describe how two forces would affect a material obeying Hooke’s Law.
* Describe an experiment to find the spring constant of a given spring.
* State how the value of spring constant could be used.
* Recall SI units for force, distance, time, and speed.
* Recall the equation that links speed, distance, and time.
* Calculate values of speed, when given values of time and distance.
* Describe features of a distance-time graph.
* Define ‘moment of a force.’
* Calculate the value of the moment of a force.
* Recall the equation that links pressure, force, and area.
* Recall the SI unit and common name of the unit of pressure.
* Describe atmospheric pressure and explain the cause of it.

**Medicine*** On a Picture of the female reproductive organ label the Uterus, Ovaries, Vagina, cervix and Fallopian tube.
* Describe the function of the Uterus, Ovaries, Vagina, cervix and Fallopian tube.
* On a picture of the Male reproductive organ label the Urethra, sperm duct, testis, Gland and Scrotum.
* Describe the function of the Urethra, sperm duct, testis, Gland and Scrotum.
* Give HIV, Gonorrhoea, Chlamydia and Genital warts as examples of STIs.
* Describe the symptoms of HIV, Gonorrhoea, Chlamydia.
* State condoms as barrier methods of contraception.
* State the pill, the implant and the injection as examples of hormonal methods of contraction.
* State that Hormonal methods of contraception do not stop STIs.
* State a “normal” cell contains 46 chromosomes in 23 pairs in a human.
* State that “gamete” contain 23 chromosomes.
* Define the term fertilisation as per lesson 6.
* Define the term infertility as per lesson 7.
* State the menstrual cycle as 28 days long.
* State ovulation occurring on day 14.
* Describe the function of FSH and LH in the menstrual cycle.
* Identify on a diagram of human gestation the amniotic sac, amniotic fluid, placenta, umbilical cord and foetus.
* State duration in Humans is 39 weeks
* Describe the function of the amniotic sac, amniotic fluid, placenta, umbilical cord.
* Identify the main nutrient groups as fat, protein, carbohydrates, fibre and vitamins/minerals.
* Describe the function of fat, protein, carbohydrates, fibre and vitamins/minerals. As per the L11
* Define the term Balanced diet as per L11.
* Give anaemia, Rickets, scurvy and kwashiorkor as examples of “deficiencies” associated with an unbalanced diet
* State that Rickets is a deficiency in \*, Survey-Vitamins C, Anaemia- Iron
* Describe the symptoms of anaemia, scurvy, and Rickets.
* State that Energy is needed in the human body to support Chemical reactions (e.g digestion), Movement, Removal or waste, and Keeping warm.
* Give Age, Gender and Exercise as factors that affect how much energy you use
 | [Careers in Engineering](https://www.prospects.ac.uk/jobs-and-work-experience/job-sectors/engineering-and-manufacturing/5-exciting-careers-in-engineering)[Careers in medicine](https://www.prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/medicine) | <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Rollercoaster-Engineering-KO.pdf><https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Medicine-KO.pdf> |
| Term 3 | **Food Technology*** Describe examples of jobs within the food science industry.
* State the different nutrient groups.
* Describe the function of the different nutrient groups.
* Define the term balanced diet.
* State examples of deficiency diseases and describe how each are caused.
* State factors that affect the amount of energy a person needs.
* Describe how to test for starch, sugars, protein and fats.
* Describe what an emulsion is.
* Label the digestive system and describe the function of each organ.
* Describe the function of gut bacteria.
* Draw and label a yeast cell and explain how it is useful in baking.
* State what food additives and e numbers are and why they are used.
* State the five different taste types.
* Identify when a casualty should be put into the recovery position.

**Electrical Engineering*** Describe examples of jobs within the electronic and electrical industry.
* State the different energy stores.
* Recall the Conservation of Energy.
* Describe different methods for producing electricity.
* Define ‘current’ and name the device used to measure it.
* Define ‘potential difference’ and name the device used to measure it.
* Identify standard circuit symbols.
* Construct and draw simple series and parallel circuits.
* Define ‘resistance’
* Recall and use the equation $V=I×R $
* Describe materials as ‘good electrical conductors’ or ‘poor electrical conductors’/’electrical insulators’
* Recall magnetic materials
* Draw magnetic fields using conventional symbols
* Recall the difference between a permanent magnet and an electromagnet.
* Describe methods for increasing the strength of an electromagnet.
* Explain why electromagnets are a better choice for given examples.
 | [Food science](https://www.prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/food-science)[Electrical engineering](https://www.prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/electrical-and-electronic-engineering) | <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Food-Science-KO-1.pdf><https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Electrical-Engineering-KO.pdf> |