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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](Micrhttps://www.prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/microbiology)  [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 * 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> |