Syllabus outcomes for experiments

Investigation	Knowledge and understanding outcome	Skills: Working scientifically outcome
Introductory experiment – A convenient form of energy	SC4 PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students: c. relate electricity with energy transfer in a simple circuit d. construct and draw circuits containing a number of components to show a transfer of electricity e. investigate some everyday energy transformations that cause change within systems, including motion, electricity, heat, sound and light	A student: › identifies questions and problems that can be tested or researched and makes predictions based on scientific knowledge SC4-4WS b. making predictions based on scientific knowledge and their own observations (ACSIS124, ACSIS139) A student: › collaboratively and individually produces a plan to investigate questions and problems SC4-5WS WS5.1 Students identify data to be collected in an investigation by: b. proposing the type of information and data that needs to be collected in a range of investigation types, including first-hand and secondary sources A student: › follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually SC4-6WS WS6 Students conduct investigations by: a. collaboratively and individually conducting a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125, ACSIS140) b. assembling and using appropriate equipment and resources to perform the investigation, including safety

		equipment c. selecting equipment to collect data with accuracy appropriate to the task (ACSIS126, ACSIS141) A student: › presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations SC4-9WS A student: › presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations SC4-9WS WS9 Students communicate by: c. using a recognised method to acknowledge sources of data and information
Experiment - Simple electric circuits	SC4 PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students: d. construct and draw circuits containing a number of components to show a transfer of electricity e. investigate some everyday energy transformations that cause change within systems, including motion, electricity, heat, sound and light	A student: › identifies questions and problems that can be tested or researched and makes predictions based on scientific knowledge SC4-4WS b. making predictions based on scientific knowledge and their own observations (ACSIS124, ACSIS139) A student: › follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually SC4-6WS WS6 Students conduct investigations by: a. collaboratively and individually conducting a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125, ACSIS140) b. assembling and using appropriate equipment and

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Experiment – Constructing electric circuits	SC4 PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students: d. construct and draw circuits containing a number of components to show a transfer of electricity	A student: › follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually SC4-6WS WS6 Students conduct investigations by: c. selecting equipment to collect data with accuracy appropriate to the task (ACSIS126, ACSIS141) WS9 Students communicate by: c. using a recognised method to acknowledge sources of data and information
Experiment - Energy losses in different wires	SC4 PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students:	A student: › follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually SC4-6WS

	c. relate electricity with energy transfer in a simple circuit e. investigate some everyday energy transformations that cause change within systems, including motion, electricity, heat, sound and light	WS6 Students conduct investigations by: c. selecting equipment to collect data with accuracy appropriate to the task (ACSIS126, ACSIS141) d. following the planned procedure, including in fair tests, measuring and controlling variables (ACSIS126, ACSIS141)
Experiment - Conductors and insulators	SC4 PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students: c. relate electricity with energy transfer in a simple circuit d. construct and draw circuits containing a number of components to show a transfer of electricity	A student: › identifies questions and problems that can be tested or researched and makes predictions based on scientific knowledge SC4-4WS b. making predictions based on scientific knowledge and their own observations (ACSIS124, ACSIS139) A student: › follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually SC4-6WS WS6 Students conduct investigations by: c. selecting equipment to collect data with accuracy appropriate to the task (ACSIS126, ACSIS141) A student: › presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations SC4-9WS A student: › presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations SC4-9WS WS9 Students communicate by: c. using a recognised method

		to acknowledge sources of data and information A student: › processes and analyses data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions SC4-7WS WS7.1 Students process data and information by: a. summarising data from students' own investigations and secondary sources (ACSIS130, ACSIS145) c. extracting information from diagrams, flowcharts, tables, databases, other texts, multimedia resources and graphs including histograms and column, sector and line graphs
Experiment - A model electric motor	SC 4 PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students: e. investigate some everyday energy transformations that cause change within systems, including motion, electricity, heat, sound and light	A student: › identifies questions and problems that can be tested or researched and makes predictions based on scientific knowledge SC4-4WS WS4 Students question and predict by: a. identifying questions and problems that can be investigated scientifically (ACSIS124, ACSIS139) A student: › processes and analyses data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions SC4-7WS a. summarising data from students' own investigations and secondary sources (ACSIS130, ACSIS145)
Experiment - Potential difference and current		A student: › develops questions or hypotheses to be investigated scientifically SC5-4WS b. predicting outcomes based on observations and scientific

		knowledge A student: › produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively SC5-5WS WS5.2 Students plan first-hand investigations by: a. planning and selecting appropriate investigation methods, including fieldwork and laboratory experimentation, to collect reliable data (ACSIS165, ACSIS199) d. specifying the dependent and independent variables for controlled experiments WS5.3 Students choose equipment or resources for an investigation by: d. assessing risks and addressing ethical issues associated with these methods (ACSIS165, ACSIS199)
Experiment - Series and parallel circuits	SC5 PW3 Scientific understanding of current electricity has resulted in technological developments designed to improve the efficiency in generation and use of electricity. Students: c. compare the characteristics and applications of series and parallel electrical circuits	A student: › undertakes first-hand investigations to collect valid and reliable data and information, individually and collaboratively SC5-6WS WS6 Students conduct investigations by: b. safely constructing, assembling and manipulating identified equipment d. using appropriate units for measuring physical quantities student: › applies scientific understanding and critical thinking skills to suggest possible solutions to identified problems SC5-8WS WS8 Students solve problems by: e. using models to explain phenomena and make predictions f. applying critical thinking in

		considering suggested proposals, solutions and conclusions, including a consideration of risk
Experiment - Generating electricity	SC5 PW3 A student: › explains how scientific understanding about energy conservation, transfers and transformations is applied in systems SC5-11PW PW3 Scientific understanding of current electricity has resulted in technological developments designed to improve the efficiency in generation and use of electricity. Students: d. outline recent examples where scientific or technological developments have involved specialist teams from different branches of science, engineering and technology, eg low emissions electricity generation and reduction in atmospheric pollution	A student: › produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively SC5-5WS WS5.3 Students choose equipment or resources for an investigation by: a. identifying appropriate equipment and materials c. selecting equipment to collect and record reliable data or information, using digital technologies as appropriate, eg data loggers A student: › undertakes first-hand investigations to collect valid and reliable data and information, individually and collaboratively SC5-6WS WS6 Students conduct investigations by: b. safely constructing, assembling and manipulating identified equipment d. using appropriate units for measuring physical quantities A student: › applies scientific understanding and critical thinking skills to suggest possible solutions to identified problems SC5-8WS WS8 Students solve problems by: d. using cause-and-effect relationships to explain ideas
Experiment - Ohm's Law and Power	SC5 PW A student: › explains how scientific understanding about energy conservation, transfers and transformations is applied in systems SC5-11PW	A student: › produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively SC5-5WS WS5.2 Students plan first-hand

	PW3 Scientific understanding of current electricity has resulted in technological developments designed to improve the efficiency in generation and use of electricity. Students: a. describe voltage, current and resistance in terms of energy applied, carried and dissipated b. describe qualitatively the relationship between voltage, resistance and current c. compare the characteristics and applications of series and parallel electrical circuits	investigations by: c. designing controlled experiments to collect valid first-hand data d. specifying the dependent and independent variables for controlled experiments A student: › undertakes first-hand investigations to collect valid and reliable data and information, individually and collaboratively SC5-6WS WS6 Students conduct investigations by: b. safely constructing, assembling and manipulating identified equipment c. selecting and using appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS166, ACSIS200)