16/08/12 Created by Tony Ford
STEM   Years 1- 10
Course Overview Year 5
Physical Sciences, Science as a Human Endeavour, Science Inquiry Skills.

Outcome	Concept	Activity	Worksheets	Resources Required
SU Year 5 Light from a source forms shadows and can be absorbed, reflected and refracted SHE Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives Scientific knowledge is used to inform personal and community decisions SIS With guidance, pose questions and plan appropriate investigation methods to answer questions or solve problems Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate Use equipment and materials safely, identifying potential risks Construct and use a range of representations, including tables and graphs, Compare data with predictions and use as evidence in developing explanations Suggest improvements to the methods used to investigate a question or solve a problem Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	**Year 5** Light comes in many forms visible and invisible. Visible Light has a spectrum of colours. We see these colours with special receptors in our eyes. Light varies also in brightness depending on the power of the source and how close we are. Light is reflected from opaque materials. Amount of reflection depends on the colour and shade. Light is transmitted and can be refracted through transparent media. The amount of refraction changes with the colour so rainbows are formed. Lenses and mirrors are useful devices for changing the size of images.	Research Invisible types of Light Research how animals see. Investigating light brightness Investigating Light reflections, using Light sensors Investigating light refracting. **Project** Design a Kaleidoscope using mirrors **Extension Robotics**: Use LEGO hardware and software to measure light as you move. Make a colour detector for a blind person (turns light into some other energy form)	5.1 Lesson 1 What is light? 5.2 Investigating Light Brightness 5.3 Investigating Light Reflections 5.4 Investigating Light Refraction 5.5P Make a Kaleidoscope 5.2B Investigating Light Brightness using LEGOSoftware. 5.2C Make a single motor car 5.6P Robotics: Make a Colour Detector 5.7Simple 2 motor car 5.7b 2 motor car attachments	Light experiment gear: mirror lens triangular glass prism coloured cards metre rule Light Sensor and data logger. or Digital Light meter or IPhone App Materials for kaleidoscope: tube Mirrors beads baking / waxed paper Mindstorms Robotics Kit Light Sensor and torch Colour sensor Various coloured objects.

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Design Technology Outcomes AC Syllabus 6.2 Investigate how forces or electrical energy can control movement, sound or light in a designed product or system 6.5 Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use 6.6 Critique needs or opportunities for designing and investigate materials, components, tools, equipment and processes to achieve intended designed solutions **Digital Technology Outcomes AC Syllabus** 6.3 Acquire, store and validate different types of data, and use a range of commonly available software to interpret and visualise data in context to create information **Maths Outcomes AC Syllabus** Describe translations, reflections and rotations of two- dimensional shapes. Identify line and rotational symmetries (ACMMG114) Estimate, measure and compare angles using degrees. Construct angles using a protractor (ACMMG112) Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies (ACMSP119)	**Year 5** Reflection of light by opaque materials. Refraction of light by angled transparent materials Dispersion of light by refraction in prisms. Using lens to magnify light. Using combinations of mirrors to produce aesthetic designs . data logging light data can be extremely useful in making helpful technology. Reflection of objects in a mirror produces laterally reversed images. Light brightness decreases with distance from a source.	Investigating Light reflections, using Light sensors Investigating light refracting. **Project** Design a Kaleidoscope using mirrors **Extension Robotics**: Use LEGO hardware and software to measure light as you move. Make a colour detector for a blind person (turns light into some other energy form) Investigate reflections in a mirror Measure angles between mirrors. Collect light brightness data and plot a graph of light brightness versus distance.	5.3 Investigating Light Reflections 5.4 Investigating Light Refraction 5.5P Make a Kaleidoscope 5.2B Investigating Light Brightness using LEGOSoftware. 5.2C Make a single motor car 5.6P Robotics: Make a Colour Detector 5.7Simple 2 motor car 5.7b 2 motor car attachments 5.3 Investigating Light Reflections 5.2 Investigating Light Brightness	Light experiment gear: mirror lens triangular glass prism coloured cards metre rule Light Sensor and data logger. or Digital Light meter or IPhone App Materials for kaleidoscope: tube Mirrors beads baking / waxed paper Mindstorms Robotics Kit Light Sensor and torch Colour sensor Various coloured objects.