LHS SCIENCE SUMMER PROGRAMMES 2025 - 8 weeks

Taught in age-adjusted groups: 4-7, 8-13 years, (separately taught, with age-adjusted highly interactive content). Our teacher/children ratio in all our classrooms is 1:6

Book single days or the full weeks from 9.30-3.30 (free early drop-off from 8.30, chargeable late pick-up by 4.30, book online, 10% siblings and friends' discounts applied automatically when booking online).
Accompanied outdoor access in all our venues access during break time (weather permitting).

-UCS Senior School NW3, Frognal, Hampstead, London, United Kingdom, NW3 6XH
-Marlborough Primary School, Draycott Avenue, London SW3 3AP
-MPW School, 65 Queens Gate, London SW7 5AB

CLASSROOM-BASED HOLIDAY CAMP INFORMATION

- Weekly/daily holiday camps run from 9.30-3.30, (free early drop-off from 8.30 am)
- Our holiday camps are completely hands-on & project-based throughout each day
- Your children will be grouped & taught separately by ages/ability and will be assisted during all experiments
- Our teachers are fully vaccinated & have enhanced DBS checks in place
- We have a very high teacher/child ratio during all camp days (1:6)
- All workshops are fully risk assessed
- Regular and accompanied breaks for refreshments and outdoor activities (weather permitting)
- PLEASE NOTE: Lunch/2 snacks have to be provided by the parents, due to the different dietary requirements.
- **WE DO NOT ALLOW ANY NUTS, SEEDS, OR EGGS IN THE ROOM**!

1. **Mon-Fri, 7-11 July 2025 – The Physics LAB: Newton, Volta, Einstein and Quantum Physics**
2. **Mon- Fri, 14-18 July 2025 - "The Wonderful World of Chemistry"**
3. **Mon – Fri 21-25 July 2025 – Structures of Innovations: Exploring the Engineer's Universe**
4. **Mon- Fri 28 July -1 August – Exploring the Science of Biomes: From Arid Sands to Mountain Summits**
5. **Mon Fri 4 -8 Aug 2025 – Junior Medical Explorers: Discovering the World of Medicine**
6. **Mon -Fri 11-15 Aug 2025 - From Watts to Waves: A Journey Through the Science of Energy**
7. **Mon -Fri 18 - 22 Aug 2025 – Early Innovations: Science and Technology in Ancient Cultures**
8. **Mon Fri: 25-28 August 2025 – The Biology LAB: Exploring How Living Things Work**

WEEK 1: The Physics LAB: *Newton, Volta, Einstein and Quantum Physics*

Day 1 Mon- Fri, 7-11 July 2025 The Physics LAB: *Newton, Volta, Einstein and Quantum Physics*

- *What is Gravity and its Effect in Our Universe?*
- *I Galileo Galilei*
- *Leonardo and the Science of Flight*
- *Rocket Science and How Far Can We Get?*

Day 2 Mon- Fri, 7-11 July 2025 The Physics LAB: *Newton, Volta, Einstein and Quantum Physics*

- *From Solid to Plasma: States of Matter*
- *What are Forces?*
- *Isaac Newton and the Newtonian Laws*
- *What is Energy?*
- *Density and the Property of Materials*

Day 3 Mon- Fri, 7-11 July 2025 The Physics LAB: *Newton, Volta, Einstein and Quantum Physics*

- *Electromagnetisms and Light*
- *Electricity and Circuits*
- *Alexander Volta and the Invention of the Battery*
- *Green Energy and New Materials*

Day 4 Mon- Fri, 7-11 July 2025 The Physics LAB: *Newton, Volta, Einstein and Quantum Physics*

- *Dance of Particles: Introduction in Particle Physics*
- *Strange Atoms/Week and Strong Forces*
- *A Journey Through the Life of Stars*
- *Stephen Hawking and the mystery of Black Holes*
- *Is Time Travel Possible?*

Day 5 Mon- Fri, 7-11 July 2025 The Physics LAB: *Newton, Volta, Einstein and Quantum Physics*

- *The Physics of Sound*
- *What are Waves: A Journey Through the World of Vibrations*
- *What is Echolocation?*
- *The Invention of the Telephone and How this Changed Us*

Week 2: The Wonderful World of Chemistry

Day 1: Mon-Fri,14-17 July 2025 *The Wonderful World of Chemistry*

- *What is Chemistry? From the first Alchemists to modern Chemists*
- *What is the matter? Incredible atoms and the Periodic Table*
- *Hydrogen and Helium: The Universe's first Elements*
- *Chemical bonding: How the Elements interact*

Day 2: Mon-Fri, 14-17 July 2025 *the Wonderful World of Chemistry*

- *What is a Chemical?*
- *Explosive Chemical Reactions and amazing Physical changes*
- *What are the States of Matter? From the Coldest Condensates to the Hottest Plasmas*
- *The Properties of Matter – Amazing Materials of the Future!*
- *Non-Newtonian Liquids that break all the Rules!*

Day 3: Mon-Fri, 14-17 July 2025 *the Wonderful World of Chemistry*

- *Corrosive Acids and Caustic Alkalis*
- *The Magic of Water, and its Evil Twin, Hydrogen Peroxide*
- *The Element of Life: Adventures with Carbon*
- *Can you freeze a Gas? Experiments with Carbon Dioxide*
- *Radioactive! Marie Curie and the most Dangerous Elements*

Day 4: Mon-Fri, 14-17 July 2025 *The Wonderful World of Chemistry*

- *Heavy Metal: The Metallic Elements and their Properties*
- *The Superpowers of Iron and Copper*
- *Dazzling Polymers and how to make them!*
- *Plastic and Paper: Recycle, Reuse, and Reduce!*

Day 5: Mon-Fri, 14-17 July 2025 *The Wonderful World of Chemistry*

- *What is Density? Can you stack Liquids?*
- *The elements in your body!*
- *Dorothy Hodgkin and the beautiful World of Crystals.*
- *Experiments with Chromatography- the Chemistry of Colour*

WEEK 3 The World of Engineers: Structures of Innovations: Exploring the Engineer's Universe

Day 1 Mon – Fri 21-25 July 2025 – Structures of Innovations: Exploring the Engineer's Universe

- *Engineering and Problem Solving*
- *How Simple Machines Changed our Life*
- *Cogs and Wheels*
- *The Invention of Cars*

Day 2 Mon – Fri 21-25 July 2025 – Structures of Innovations: Exploring the Engineer's Universe

- *How do Submarine Work?*
- *How do we Build Dams and Why We Need Them?*
- *Leonardo Da Vinci, Catapults, and Divers*
- *The Challenge of Building tall Towers ng*

Day 3 Mon – Fri 21-25 July 2025 – Structures of Innovations: Exploring the Engineer's Universe

- *Investigate Bridges and Tunnels*
- *Kingdom Brunel and his big Engineering Dreams*
- *Property of Materials*
- *Friction and Resistance*

Day 4 Mon – Fri 21-25 July 2025 – Structures of Innovations: Exploring the Engineer's Universe

- *Margaret Hamilton and the Apollo Mission*
- *Space Engineers: The Science of reusable Rockets*
- *How to Land on a Comment: The Amazing Rosetta Project*
- *The Invention of the Telephone*

Day 5 Mon – Fri 21-25 July 2025 – Structures of Innovations: Exploring the Engineer's Universe

- *Maths in Nature: Fractals, Symmetry, Fibonacci and more*
- *Amazing New Materials*
- *Biomimicry! Engineered by Nature*
- *The Introduction in Artificial Intelligence*

Week 4 Exploring the Science of Biomes: From Arid Sands to Mountain Summits:

Day 1: Mon- Fri 28 July -1 August Desert Ecosystems

- *Explore Desert: Gobi, Atacama, Sahara and other Mysterious Places*
- *Desert Survivors: The Amazing Adaptations of Camels and Cactuses*
- *Desert Biomimicry or Let's Learn from the Namibian Darkling Beetle*
- *Finding Water in the Desert? – Evaporation and Condensation/*
- *Mirages: The Physics of Heat and Light in the Desert*

Day 2: Mon- Fri 28 July -1 August Ecosystems

- *Fresh Water Ecosystems: Rivers, Lakes and Streams*
- *Chilling Adventures: Exploring Wildlife and Human Adaptations in the Arctic Tundra*
- *Ecosystems in Motion: Ocean Food Webs, Waves, and Tidal Forces*
- *Amazing Journeys of Marine Animals: Whales Migration and Sea Turtle Nesting*
- *Amphibians Unleashed: Masters of the Land and Water*

Day 3: Mon- Fri 28 July -1 August The Tropics

- *In the Heart of the Jungle: Rainforest Ecology and Adaptations*
- *Mastering the Art of Disguise: Exploring Animal Camouflage*
- *Nature's Pharmacy: Medicines from the Tropical Biome (plants and fungi)*
- *Aztec Agriculture: Chinampas and Sustainable Farming Techniques*
- *The Inca Road System: Engineering Marvels of the Andes*

Day 4: Mon- Fri 28 July -1 August The Web of Life; Earth's Intricate Ecosystems

- *Geology and Botany: Unveiling the Earth's Living Landscape*
- *Secrets of Soil: Unveiling the Hidden Word Beneath our Feet*
- *The Hidden Ecosystem Engineers: Termites and Ants*
- *Beyond Honey: The importance of Bees*
- *Rachel Carson and Ecological Protection, Conservation/ Rewilding. What are Food Webs?*

Day 5: Mon- Fri 28 July -1 August Artificial Ecosystems: Surviving on Alien Planets

- *Space Age Navigation: Space Travel and Spaceships of the Future*
- *Cloud Cities: Designing Human Habitats in Venus' Atmosphere*
- *Mars Gardens: Growing Plants in Extraterrestrial Environments*
- *Moon Habitats: Engineering a Lunar Home*

Week 5 Junior Medical Explorers: Discovering the World of Medicine

Day 1 Mon Fri: 4-8 August 2025 Junior Medical Explorers: Discovering the World of Medicine

- *Doctors Through Time: The History of Medicine*
- *Inside the Human Body*
- *Bio-machinery: Muscles, Tendons, and the Skeleton*
- *Red and White: The Heroes of our Blood*

Day 2 Mon Fri: 4-8 August 2025 Junior Medical Explorers: Discovering the World of Medicine

- *How Doctors see Inside Us: Medical Imaging*
- *Our Incredible Nervous System*
- *Wonders of the Brain*
- *Vision and How our Eyes Play Tricks on Us*

Day 3 Mon Fri: 4-8 August 2025 Junior Medical Explorers: Discovering the World of Medicine

- *The Digestive System and our Miraculous Micro-biome*
- *Elements: Investigating What We Are Made Of?*
- *Let's learn about Teeth!*
- *The Circulatory System: Heart and Blood*

Day 4 Mon Fri: 4-8 August 2025 Junior Medical Explorers: Discovering the World of Medicine

- *John Snow and Germ Theory that Saved Millions Lives*
- *The Army Inside Us: Our Immune System*
- *The Power of Genetics: The Discoveries of Crick, Watson and Frankin*
- *What are Pathogens?*

Day 5 Mon Fri: 4-8 August 2025 Junior Medical Explorers: Discovering the World of Medicine

- *How we are winning the fight against Germs: Alexander Fleming and Mary Hunt*
- *Medicine form Nature: The Immortal Jellyfish or How Do We Learn from Animals*
- *Viruses and Vaccines: Edward Jenner*
- The Future of Medicine: Will we one day live forever? The Robots Doctors

Week 6 From Watts to Waves: A Journey Through the Science of Energy

Day 1: Monday- Friday 11-15 August 2025 - From Watts to Waves: A Journey Through the Science of Energy

- *What is Energy?*
- *A History of Energy/ Using Energy at Home*
- *What is the Law of Conservation of Energy?*
- *What are Atoms? Universe of Energy: the energy from stars and galaxies*
- *What is Dark Energy*
- *The Energy of Our Closest Star: the Sun*

Day 2: Monday- Friday 11-15 August 2025 - From Watts to Waves: A Journey Through the Science of Energy

- *What is Photosynthesis or How Plants Create Energy?*
- *Food as Energy*
- *What is Heat and Temperature?*
- *What is Chemical Energy?*

Day 3: Monday- Friday 11-15 August 2025 - From Watts to Waves: A Journey Through the Science of Energy

- *Light as a source of Energy*
- *How Newton Discovered the Secrets of Universe*
- *The Energy of Bioluminescence*
- *Storing Energy: from Volta to the Invention of Fuel Cells*
- *Can we Break the Speed of light?*

Day 4: Monday- Friday 11-15 August 2025 - From Watts to Waves: A Journey Through the Science of Energy

- *The Nature of Sound and Vibrations*
- *How Do we Detect Sounds?*
- *Seeing with Sound: Echolocation*
- *What is Gravity? (Little Science)*
- *Gravitational Potential Energy (Advance Science)*

Day 5: Monday- Friday 11-15 August 2025 - From Watts to Waves: A Journey Through the Science of Energy

- *What is Electricity? The Science behind Christmas Lights*
- *How Benjamin Franklin Collected Electric Charges from Thunderclouds*

- *Nikola Tesla and his Fantastic Inventions*
- *Green Energy: Wind Energy and Hydro Electricity*

WEEK 7: The History of Science of Ancient Civilisations

Day 1 Mon-Fri, 18-22 Aug 2025 The History of Science of Ancient Civilisations

The Inventions of Ancient China

- *Paper Making, Maps and the Invention of the Compass*
- *The Kite and Forces of Flight*
- *Earthquakes and the Seismograph*
- *From Gunpower to Rockets*

Day 2 Mon-Fri, 18-22 Aug 2025 The History of Science of Ancient Civilisations

The Discoveries of Ancient Greece

- *Famous Greeks – Archimedes and the golden crown*
- *How Democritus discover his Atomic Theory*
- *Greek medicine – Galen the Gladiator's Doctor*
- *Early Greek Astronomers and what they learned from Babylonians*

Day 3 Mon-Fri, 18-22 Aug 2025 The History of Science of Ancient Civilisations

Secrets of Ancient Egypt

- *Mystery of Rosetta Stone*
- *Introduction to Egyptology and Archaeology*
- *The Mystery of Pyramids*
- *Papyrus, Ink, Toothpaste and other Amazing Discoveries*
- *The Secrets of Mummification*

Day 4 Mon-Fri, 18-22 Aug 2025 The History of Science of Ancient Civilisations

Aztecs, Mayans and Incas

- *Ancient Cities, Farms, and Bridges*
- *Sports and the Discovery of Rubber*
- *Obsidian and Powerful Volcanoes*
- *Aztecs Food and how it changed out life*

Day 5 Mon-Fri, 18-22 Aug 2025 The History of Science of Ancient Civilisations

Discoveries of Ancient Rome

- *Roman Concrete and Roman Roads*
- *How Roman Built Aqueducts*
- *Arches, Domes, Vaults and other Roman Architectural Innovations*
- *Water Mills and Roman Baths (Hydrodynamics and Thermodynamics)*

Week 8 The Biology LAB: Exploring How Living Things Work

Day 1 Mon Fri 25-29 Aug 2025, The Biology LAB: Exploring How Living Things Work

- *From Bacteria to Humans*
- *The Life of the Cell: the Perfect Mini Factory*
- *The Secret of Mitochondria*
- *Lynn Margulis and symbiosis*
- *Tiny Titan: The Amoeba's World*

Day 2 Mon Fri, 25-29 Aug 2025 The Biology LAB: Exploring How Living Things Work

- *Robert Hook and the Invention of the Microscope*
- *Viruses: are Aliens Living Amongst Us?*
- *Microorganisms and their Importance*
- *What is vaccination and why we need it?*
- *Who was Edward Jenner?*

Day 3 Mon Fri 25-29 Aug 2025 The Biology LAB: Exploring How Living Things Work

- *Guardians of the Genetic Code: The DNA*
- *The Digestive Journey of a Sandwich*
- *Respiratory System in Humans and Animals*
- *Five Senses in Human and Animals*

Day 4 Mon Fri 25-29 Aug 2025, The Biology LAB: Exploring How Living Things Work

- *Biology Thermometer: Cold Blooded vs Warm Blooded*
- *Mightily Calcium: Skeletons, Teeth and beyond*
- *Why our Brain is so Special?*
- *Hearing and Vision in the Animal World*

Day 5 Mon Fri 25-29 Aug 2025, The Biology LAB: Exploring How Living Things Work

- *Solution for Survival: How Animals Adapt to Extreme Conditions*
- *Platypuses: the Most Mysterious Animals*
- *Jane Goodall: The Woman who Walked with the Apes*
- *The Story of Evolution and Where It Takes Us*
- *Can we become an Interplanetary species?*