



Summer Camp Programmes 2019

Daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years
(age adjusted & separated groups)

- Baden-Powell House, 65-67 Queens Gate, opp. Natural History Museum, London SW7 5JS
- Swiss Cottage Library, 88 Avenue Road, London NW3 3HA

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| 8-12 July | Journey to the Centre of Biology: From the Mini World of Bacteria to Humans |
| 15-19 July | Think Physics: Newton, Volta, Einstein and Quantum Physics |
| 22-26 July | When Science meets Architecture: Shapes, Materials and the Cities of Future |
| 29 Jul-2 Aug | Astrogeology: Exploration on Earth, Planets, Moons, Asteroids, Comets and Meteorites |
| 5-9 Aug | The Science of Seas and Oceans: Whales, Sharks, Rays and much more! |
| 12-16 Aug | Engineered! The Journey from Wheels to Rocket Engines |
| 19-23 Aug | Science Geniuses: Great and fearless Men & Women in Science who changed the World? |
| 27-30 Aug | Biochemistry: Molecules and Elements and how they work |
| 2-4 Sep | Fascinating Zoology: Animals and Ecosystems |

SUMMER CAMP WEEK 1: Journey to the Centre of Biology: From the Mini World of Bacteria to Humans

Monday to Friday, 8-12 July 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- From amoeba to humans
- The life of the cell: the perfect mini factory
- The secret of mitochondria
- Lynn Margulis and symbiosis

Day 2:

- Robert Hook and the invention of the microscope
- Viruses: are aliens leaving amongst us?
- Microorganisms and their importance
- What is vaccination and why we need it?
- Who was Edward Jenner?

Day 3:

- What are nutrients?
- Digestive ride
- Respiratory system in humans and animals
- Five senses

Day 4:

- What is calcium: skeletons and teeth
- Hearing and Vision in the animal world
- Why our brain is so special

Day 5:

- What is Marine Biology?
- Eugenie Clark and her sharks
- All about jellyfish
- Veterinary or who wants to be a Vet?

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SUMMER CAMP WEEK 2: Think Physics: Newton, Volta, Einstein and Quantum Physics

Monday to Friday, 15 -19 July 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- What are forces?
- Isaac Newton and the Newtonian Laws
- What is energy
- State of matter
- Density and the property of materials

Day 2:

- 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 3:

- Electromagnetisms and light
- Electricity and circuits
- Alexander Volta and the invention of the battery
- Green energy and new materials

Day 4:

- Introduction in Particle Physics
- Strange atoms
- Weak and strong forces
- The life of stars
- Stephen Hawking and the mystery of Black Holes
- Is Time Travel Possible?

Day 5:

- The physics of sound
- What are waves?
- What is echolocation?
- The invention of the telephone and how this changed us



SUMMER CAMP WEEK 3: When Science Meets Architecture: Shapes, Materials and the Cities of Future

Monday to Friday, 22-26 July 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- Engineers or architects?
- Architectural landmarks
- Egyptian pyramids, the coliseum and the duomo
- Properties of materials

Day 2:

- The invention of the simple machines
- How the wheel changed the world
- The science of force in bridges
- Let's build columns
- Beams, vaults and arches

Day 3:

- Who was Antonio Gaudi?
- Diversity of houses
- Introduction to towers
- Norman Foster and his buildings

Day 4:

- Who wants to be an engineer?
- Kingdom Brunel and his legacy
- Naval Architecture: Liners, hovercrafts, and submarines
- Animal architects

Day 5:

- Zaha Hadid and other architects arrived from the future
- How climate affects architecture
- Sustainable architecture
- Design your own home



SUMMER CAMP WEEK 4: Astrogeology: Exploration on Earth, other Planets, Moons, Asteroids, Comets and Meteorites

Monday to Friday, 29 July -2 Aug 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- What is beneath our feet?
- Welcome to earth: size, shape, spin and age
- How Henry Cavendish, Isaac Newton, Edmond Halley and Charles Lyell helped answer some important questions.
- How do scientists know what is inside the earth?
- Inge Lehman: The Geologist who discovered earth's deepest secret

Day 2:

- Rocks and minerals
- Exploration of crystals
- Who wants to be a volcanologist?
- The science behind earthquakes
- Plate tectonics and Richter Scale

Day 3:

- What is astrogeology?
- Our closest neighbour, the Moon
- Our Solar family of rocky planets: Mercury, Venus, Mars
- Can we colonise Mars?

Day 4:

- Moons, Comets, Meteorites and other rocks in the space
- Rosetta Project
- The hidden world beneath the Antarctic Ice Sheet
- Exoplanets and how we look for them

Day 5:

- Soil and the microorganisms
- Erosion, rains and winds
- What is the shape of the ocean floor?
- Rachel Carson and what she did for our planet



SUMMER CAMP Week 5: Science of the Oceans: Whales, Sharks, Rays and more

Monday to Friday, 5-9 August 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- Intro to oceans and the its zones
- Why are the oceans salty?
- Who wants to be a Marine Biologist?
- The origins of life in the oceans

Day 2:

- Deep ocean and its habitants
- Bioluminescence and how it works
- Squids and octopuses
- How fish breath
- The wonderful world of sharks

Day 3:

- Frozen oceans and life under and above the ice
- Water cycles
- Amazing jellyfish
- Whales, dolphins and echolocation

Day 4:

- Oceanic currents
- The science of waves
- Let's Study kelp forests
- The world of sea turtles

Day 5:

- Ocean conservation
- How prolusions affect animals
- Fascinating corals
- Oceanic food chains
- The chemistry of H₂O



SUMMER CAMP WEEK 6: Engineered! The Journey from Wheels, Robotics to Rocket Engines

Monday to Friday, 12-16 Aug 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- Engineering and problem solving
- How simple machines changed our life
- Cogs and wheels
- The invention of cars

Day 2:

- Leonardo Da Vinci, catapults and divers
- How to build dams and why we need them
- The challenge of building tall tower
- How architectures work with the engineers

Day 3:

- The physics of bridges
- How to build tunnels
- Kingdom Brunel, the great engineer
- Property of materials

Day 4:

- Elon Musk/Jeff Bezos and the future science of rockets
- Nikola Tesla and his engineering projects
- The invention of the telephone
- Stephenson and the first railways

Day 5:

- The introduction in Robotics
- Amazing new materials
- Engineered by nature
- Maths in nature
- DNA and Bio-engineering



SUMMER CAMP Week 7: Science Geniuses: Great and fearless Men & Women in Science who changed the World

Monday to Friday, 19-23 Aug 2019, daily Monday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- Franklin, Crick and Watson and the secret of DNA
- Stephen Hawking and the black holes
- Isaac Newton and his laws of motion and optics

Day 2:

- Nikola Tesla and the giant thunder collector
- Katherine Johnson and the rocket science
- Archimedes and the crown challenge
- Mary Anning's fossils

Day 3:

- Alessandro Volta and the first battery
- Robert Hook and the miraculous microorganisms
- How Edward Jenner, Alexander Fleming and Louis Pasteur saved the world
- Elon Musk and the exploration of Mars

Day 4:

- Charles Darwin and the survival of the fittest
- Inge Lehman and the science of earthquakes
- Alfred Wegener and Pangea
- Rachel Carson or how to take care of our planet

Day 5:

- Galileo Galilei, Nicolaus Copernicus and the search for truth
- Dorothy Hodgkin and the world of crystals
- Leonard da Vinci and the secret of flight
- Kingdom Brunel and his big engineering dreams



Science Camp Week 8: Biochemistry: Molecules and Elements and how they work

Tuesday to Friday, 27-30 Aug 2019 (4 days), daily Tuesday-Friday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- What are atoms and molecules
- How Alchemy became Chemistry
- The quest for elements
- Elements and compounds
- The story of Dinitrogen monoxide (N₂O)

Day 2:

- The State of matter
- What is density
- All about liquids and non-Newtonian Liquids
- The story of hydrogen (H₂)
- Property of materials and how new materials change our lives

Day 3:

- The adventure of carbon
- What are chemical reactions?
- Acids and bases
- Temperature: heating and cooling down

Day 4:

- Dissolving versus melting
- Reversible/Irreversible Reactions
- The world of crystals
- Marie Curie and her discoveries

Day 5:

- The chemistry in our bodies
- Chromatography
- What is air made from?
- Water Cycle



SUMMER CAMP WEEK 9: Fascinating Zoology: Animals and Ecosystems

Monday to Wednesday 2-4 Sep 2019 (3 days), daily Monday-Wednesday, 9.30-3.30 (8.45am free early drop-off), 4-7 and 8-12 years

Day 1:

- Zoology, diversity of the animal world
- Classifications: Vertebrates and invertebrates
- Skeletons vs exoskeletons
- Water Bears, amoebas and other extremophiles

Day 2:

- Animal Superpowers
- Bats, Dolphins and echolocation
- Bees, snakes, shrimps and their amazing vision
- Octopuses and other masters of disguise

Day 3:

- What are ecosystems?
- How do animals grow?
- Fantastic insects and why they are important?
- How birds fly?