

Young Engineers Club

Sessions Overview

Through a series of entertaining and educational workshops, based on practical hands-on experiences, this course is designed to give an appreciation of how Engineering and Science contributes to everyday applications, through the medium of Photography/Imaging and for children to gain an insight into a range of related careers.

Breakdown of Sessions for the Young Engineers Club Workshops:

Session 1: Science of the Selfie

Learning opportunities include:

- A brief history of glass and how spectacles were invented.
- How multiple lenses can be used to magnify objects
- How modern lenses are manufactured (video)
- History of Mirrors and Self Portraits

Session 2: The Eye vs. The Camera

Learning opportunities include:

- Comparing how the eye works vs. a digital camera.
- What is meant by 'pupil', 'retina', 'sensor'
- How camera lenses work.
- Why cameras have different lenses

Session 3: Which camera?

Learning opportunities include:

A brief history of cameras

Compare two different digital cameras – what is the same/different in appearance/features/how they work/price.

Who designs and makes them?

Exploring menus/features of modern point and shoot cameras.

Taking a series of pictures using artistic menus.

Session 4: Light We Can See

Learning opportunities include:

That there are different kinds of light – visible/invisible

How photographers use light

How photo flash works

Using their knowledge of light and composition to take a series of images.

Session 5: Light We Can't See

Learning opportunities include:

How light is made up of different colours

How our eyes see all light as 'neutral', but cameras see it as it really is.

How we can change the temperature of our photographs to add warmth/emotion, for example.

How photographers can capture images using invisible light.

Why invisible light is important.

Medical and Engineering careers, including Thermal Imaging, where people are involved in capturing images.

Session 6: Light we could see if it wasn't so dark!

Learning opportunities include:

Slow shutter speed

What is Digital Noise?

Painting with light

Avoiding blurry pictures at low shutter speeds

Session 7: Laser Light

Learning opportunities include:

The history of lasers and how they work

How lasers can be controlled.

How photographers can capture laser images

Applications and potential careers in laser technology

Session 8: Glass Fibre

Learning opportunities include:

The story of glass fibre

How light travels through fibres

That digital images are made up of pixels and how they affect picture quality

How light can travel around corners, including practical applications

Session 9: Small Things

Learning opportunities include:

That most new scientific discoveries are made in the macro/micro world

How we can capture images of minute objects

Applications and potential careers.

Session 10: Crime Scene Photography

Learning opportunities include:

The work of crime scene photographers.

Using photography to record all information clearly.

Studying 'crime scene' photos to draw conclusions.