

Afterschool Workshop Informatics Sessions Overview

The emphasis is on practical hands-on learning, designed to give a better understanding of how the exciting world of informatics works and how photography (optics) plays a role. The course demonstrates to pupils how they can easily improve their images by following some basic principles. The approach will be informal and fun.

Breakdown of Lessons for the 6 week workshops:

Week 1: Fun Binary and Data Representation

Learning opportunities for pupils include:

- Introducing computers
- Reliability and backing up
- Ethics and law
- Standards

Week 2: Hardware and Software

Learning opportunities for pupils include:

- Introducing binary
- Numbers and binary addition
- Hexadecimal and character sets
- Encoding images
- Encoding audio and video
- Instructions
- CPU and memory
- Peripherals

Week 3: Networks

The commercial world relies on powerful imagery to give news stories and brand messages impact. This session is designed for pupils to create pictures for international magazines and newspapers, picture desks, and advertising agencies.

- Network hardware
- The Internet
- Web pages and web apps
- Security

Week 4: Databases

Learning opportunities for pupils include:

- Introducing databases
- Relational databases
- Queries and SQL
- Organising data and handling external files
- Database management systems

Week 5: Programming

Learning opportunities for pupils include:

- Programming software and the IDE
- Introducing algorithms
- Algorithms and control flow
- Constants, variables and data types
- Boolean logic
- Data structures
- Functions, procedures and modules
- Development and testing
- Raspberry Pi and Arduino

Week 6: Coding / Informatics in Industry

Learning opportunities for pupils include:

- Medical Healthcare
- Energy Solutions
- Consumer Optics
- Applied Engineering