

Camera and Modern Technology

Emerging Industries that involve optics

Imaging Partnership is pleased to offer a service to Key Stage 4 and 5 students that brings the subjects of numeracy and science together with optics to offer career paths into exciting emerging industries. The course consists of independent sessions on emerging industry career pathways.

The focus is on optics that stem from current curriculum subjects, such as numeracy and science.

Specialists can come into school to educate the students in industries that may not have been considered but offer great potential. Optics are included within these sessions to give students an advantage over others when entering their chosen industry. The sessions are adaptable to each school or students, based on their personal interests, skills and talents and which industries are available to them in the future.

Optics – The following are a selection of careers that have a strong connection with Optics, requiring skills in a specific area:

- Observatory Scientist
- Optical Designer
- Optical Engineer
- Optical Manufacturing Engineer
- Astronomy Jobs
- Aerospace Engineering Jobs
- Medical Imaging Jobs
- Nanotechnology Jobs

Current Curriculum subjects:

Science (Physics, Chemistry and Biology)

Students will be encouraged to advance their skills within the areas that relate to the careers that they show an interest in. Topics that are currently included within the curriculum and that have a strong connection with optical innovations include:

- Biosphere
- Biotechnology
- Forces and motion

Numeracy

Students that show a strong talent in one or more of the following subjects will be shown possible career pathways that include the subject as a focus. The following Mathematics topics have a strong connection with Optical Innovations:

- Algebra
- Graphs
- Pythagoras Theorem
- Trigonometry
- Statistics

New and emerging industries that utilize Optics

With the development of digital within most industries, optics have never been so vital to an industries success. Many students are unaware of the potential careers available to them through the combination of science or numeracy with the visual arts. We aim to explore all of the possibilities with each student, ensuring they have all the information needed to make informed decisions about their future careers.

A selection of careers including Numeracy

- **Engineers** – using mathematics within both practical and theoretical engineering.
- **Architects** – understanding how to design a successful structure using numeracy skills.
- **Geologists, geophysicists and oceanographers** – understanding how the world works, locating water or minerals and protecting the environment.
- **Meteorologists** – the scientific study of the atmosphere.
- **Astronomers** – the study of space, using maths to record light, distance and speed.

- **Aircraft Pilots and Flight Engineers** – understanding mathematics to record timings, height and air pressure when flying.
- **Computer Programmers** – writing computer software using a range of codes and systems.

A selection of careers including science – Physics

- **Medical** – Neurosurgery includes visualization solutions for surgery of the nervous system, solutions for plastic and reconstructive surgery and visualization solutions for surgical procedures of the spine.
- **Nuclear science** – including nuclear medicine technologists, nuclear physicists and nuclear technicians
- **Astronomical/Aeronautical Jobs** – including Pilots, Astronauts, Air traffic control and Aerospace Engineers.
- **Radiation Physics Specialist** – requires an in depth understanding of physics and radiation.
- **Forensic Scientist** – understanding how to analyse the evidence to provide an answer.
- **Nanotechnology** – working with matter on an atomic, molecular and supramolecular scale.
- **Government** – jobs within the government that include physics are – NASA, the departments of Agriculture, Energy, Defense and National Weather
- **Photonics** – focuses on the use of optical fibers in communication technology, i.e. the Internet.
- **Environmental Science** – combines both physics and environmental conservation, jobs include – environmental analyst, environmental health specialists and noise/pollution control.

A selection of careers including science - Chemistry

- **Biochemist** – studying chemical processes and transformations within living organisms.
- **Entomologist** – the study of insects, including chemical analysis.
- **Botanist** – the science of plant life and how to preserve or improve it.
- **Criminologist** – understanding the justice system with an aim to prevent crime
- **Immunologist** – the study of all aspects of the immune system in all organisms.

A selection of careers including science - Biology

- **Marine biologist** – creating and developing protected areas and fish populations
- **Nuclear medicine technologist** – the practice of nuclear medicine, used for diagnosis and therapy.
- **Radiation specialist** – surveying the safety of people exposed to radiation and monitoring nuclear energy.
- **Microscope specialist** – developing existing microscopes to aid in medical research.
- **Ecologist** – using the relevant skills to help preserve and repair nature.

- **Food scientist** – understanding how food is broken down by the body and the impact of this.
- **Zoologist** – the study of the biology of animals. Documenting and recording all findings.
- **Molecular geneticist** – the study of the function and structure of genes at a molecular level.