Lesson 4: The Mission of Physics and Carrier Awareness

- Physics is the foundation for modern science.
- There is no science-related field that has not profited from the physics discipline.
- Physics has had a profound effect on technology, engineering, and medicine.
- Indeed, physics has even made its mark in the arena of philosophy and religion, as the fields of quantum physics and relativity force mankind back to fundamental questions about what it means to "know."

Typical careers in physics

- Whether you want to explore space, time, matter or the many other intriguing elements of the physical world, a physics degree can do wonders for your career path.
- While many physics graduates go on to work within research roles, these are spread across many different industries –
- including education, automotive and aerospace industries, defense, public sector, healthcare, energy, materials, technology, computing and IT

Physics careers in space and astronomy

- As an astronomer, your job would be to study the universe, collecting data from global satellites and spacecraft and operating radio and optical telescopes.
- Other tasks within this sector include investigation and research of new materials and technologies, measuring performance of existing materials and technologies, and problem-solving at the design stage.

Physics careers in healthcare

- **Electrotherapy**
- Physics careers in the healthcare sector are numerous.
- Medical physics overlaps significantly with biomedical engineering, and physicists work alongside biomedical engineers to create, review and maintain medical technologies and equipment.
- Although cardiology and neurology are areas reserved for those with an additional medical degree,
- physicists are regularly employed within areas such as radiology, radiation oncology and nuclear medicine, in order to test and approve the latest technologies and equipmen

Physics careers in engineering

Mechanical Engineering

- The engineering sector provides many careers in physics, particularly within manufacturing and technology-based roles.
    - Physics graduates are often tasked with improving and developing products and manufacturing processes, and benefit from a large range of potential employers spanning multiple industries such as medicine, energy, transport, defense, space exploration and telecommunications.

Physics careers in energy

- Whether we're talking about renewable or non-renewable energy, there are plenty of careers in physics within the energy sector.
- Alongside the rise of renewable energy, oil and gas companies remain big players in the energy market and are major employers for physics graduates.
- Ones area of focus is on extracting fossil fuel reserves in the most efficient way possible, using knowledge of the Earth's characteristics and the newest technologies.
- Energy companies are also branching out into renewable alternatives such as wind and solar energy and are investing heavily in research and development in this area, offering much career potential.

Physics careers in technology

- Road arena of continual growth and innovation, the technology sector is a constant source of new opportunities, challenges and career paths.
- Fields with particularly high demand for research and development workers from various backgrounds include relatively young fields such as robotics, nanoscience and nanotechnology.
- Technology careers in physics may be based in public or private-sector research centers.
- Many opportunities for graduates are available within large technology companies, as these businesses are keen to attract innovative and talented researchers from around the world.

Geophysics and meteorology careers

Those who study physics are also prime candidates for environmental careers, thanks to their scientific understanding of the ways in which the Earth functions. While geophysicists are more concerned with the prediction of natural disasters, meteorologists focus on areas such as daily weather forecasting, as well as researching the long-term effects of climate change

Research scientist careers

- The main reason to study physics is to help you gain more in-depth, specialized knowledge to prepare you to work effectively in a specific field.
- Potential areas of specialization include astrophysics, particle physics, biotechnology, nanotechnology, meteorology, aerospace dynamics, atomic and laser physics, atmospheric, oceanic and planetary physics and climate science.
- The mission of physics is to advance science, engineering, and innovation throughout the world for the benefit of all and serving Society.