

What does Education for Sustainability have to do with Physics and Astronomy?

“Our staff have a passion to change the world through their research and to inspire the next generation of physicists.” (<http://devel.phys.ecs.soton.ac.uk/about/what-our-staff-say>)

Physics is about understanding how the universe works. To address the breadth of global and local challenges facing the world in the 21st Century requires crossing new frontiers in understanding our world and our place in it. Topic areas of relevance to sustainability already in the Physics and Astronomy curriculum include:

- **Energy:** energy generation, storage and usage; applications in energy efficiencies; potential transition to renewable energy sources in the context of climate change and depleted non-renewable energy sources.
- **Light:** application in use of mirrors and lenses – telescopes to engage with space, microscope to understand the minutiae of life on earth.
- **Our place in space:** human joy in understanding our place in the Universe; understanding how life formed within the cosmos.
- **Future thinking:** understanding the expansion of the Universe – its age and future evolution; the potential for life on other planets.
- **Nanoscience:** the molecular basis for life; efficient processing of devices; how nanotechnologies interact with society in a wider context.
- **Design and innovation:** advocating the use of sustainable energy, materials and sources, from production, construction, development, design and through to trade.
- **Healthcare:** application of physics in diagnosis and treatment e.g. radiotherapy.
- **Business and law:** social entrepreneurship.
- **Ethics:** in industry; use of technologies in times of emergency or political upheaval.

Key skills for physicists and astronomers which sustainability teaching cultivates:

interdisciplinarity; informed decision-making; synthesis of different opinions, theory and data; debate and reasoning; teamwork; leadership; problem-solving; oral and written communication; self-management; time-management; critical thinking; future thinking; project management; risk management; entrepreneurship.

Find out more: Contact Julia Kendal (j.kendal@soton.ac.uk) for more information including case studies on teaching sustainability in this area.