

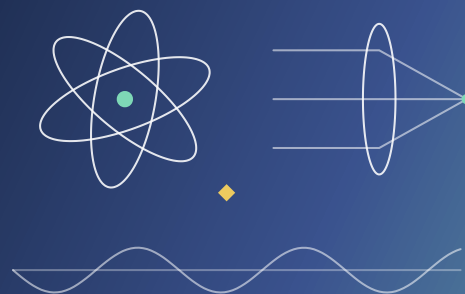
Module code

SPP-3406

Type of module

Undergraduate: Applied Physics – Elective

Environmental Physics



Modular credits

4

Total student
engagement

56 hours

Prerequisite

**SPP-1203 Classical
Mechanics**

Anti-requisite

None

Aims

To develop students' understanding of the physics principles underpinning the environment.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse the evolution, composition, and thermal structure of Earth's atmosphere, and evaluate the influence of solar radiation, geomagnetic disturbances, and greenhouse processes on planetary environments.

MLO 2

Apply thermodynamic, radiative, and dynamical principles to interpret and model atmospheric motions, tropical systems, and global circulation, including their role in weather and climate prediction.

MLO 3

Evaluate the physical mechanisms controlling atmospheric stability, inversion, and pollutant transport, and assess the applicability and limitations of dispersion models such as the Gaussian plume.

MLO 4

Critically examine the properties, measurement, and applications of radioactivity, and assess the biological and environmental implications of radiation exposure and safety measures.

MLO 5

Integrate and apply advanced environmental physics techniques—including radar, lidar, biosensors, and acoustic methods—to investigate atmospheric processes, noise pollution, and environmental monitoring challenges.

Module contents

Atmospheric evolution and structure	Solar radiation and climate	Atmospheric dynamics
Atmospheric electricity	Pollution, transport and dispersion	Radioactivity and isotopes
Radiation safety and biology	Weather forecasting and modelling	Environmental monitoring tools
Acoustics and ultrasound		

Assessment

60% **40%**
Examination Coursework



■ Examination — 60% ■ Work-based problems — 10% ■ Test — 10% ■ Written assignment — 10%
■ Group project with oral presentation or project demonstration — 10%

Formative assessment

Weekly discussion
and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	30%
Work-based problems	10%
Test	10%
Written assignment	10%
Group	10%
Group project with oral presentation or project demonstration	10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

- 1 PLO 1 (Core Disciplinary Knowledge)
- 3 PLO 3 (Experimental and Instrumentation Skills)
- 5 PLO 5 (Interdisciplinary Applications, Materials and Sustainability)

- 2 PLO 2 (Critical Thinking and Comparative Analysis)
- 4 PLO 4 (Numerical and Analytical Competence)
- 6 PLO 6 (Communication and Professionalism)

Sustainability concept addressed

- 7 SDG 7 Affordable and Clean Energy
- 9 SDG 9 Industry, Innovation and Infrastructure

Digital skills/software used (not limited to)

- Word processing software (e.g. Microsoft Word)
- Presentation software (e.g. PowerPoint)
- Web browsers (e.g. Internet Explorer)
- Learning Management Systems (e.g. Canvas)
- Communication Software (e.g. Microsoft Teams)
- Multimedia Applications (e.g. Windows Media Player)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

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