# General Information

**Module Code**

PHY-4003A

**Academic Year**

2024/5

**Module Title**

GEOPHYSICS AND ASTROPHYSICS

**Module type**

WW

**Semester / Term**

SEM1

**Level**

4

**Credit Value**

20

**Scheme**

UG

**Related Modules:**

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**Pre-requisite**

**Co-requisite**

**Forbidden**

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**Timetable slot**

UNKNOWN

**Is this module suitable for inbound study abroad students?**

Y

**Additional costs**

**Maximum number of students**

999

**Module Organiser**

Dr Robert Ferdman

## Module Description

**What is this module about?**

In this module, you will learn about the methods used to model the physics of the Earth and Universe. You will explore the energy, mechanics, and physical processes underpinning Earth's systems. This includes the study of its formation, subsequent evolution and current state through the understanding of its structure and behaviour - from our planet's interior to the dynamic surface and into the atmosphere. In the second part of this module, you will study aspects of astrophysics including the history of astrophysics, radiation, matter, gravitation, astrophysical measurements, spectroscopy, stars and some aspects of cosmology. You will learn to predict differences between idealised physics and real life situations. You'll also improve your skills in problem solving, written communication, information retrieval, poster design, information technology, numeracy and calculations, time management and organisation.

## Learning objectives and Outcomes

**What are the Learning objectives?**

Gain an integrated understanding of physical aspects of Earth processes.

Studied aspects of astrophysics including history of astrophysics, radiation, matter, gravitation, astrophysical measurements, spectroscopy, stars and some aspects of cosmology.

Improve skills in problem solving, written communication, information retrieval, poster design, information technology, numeracy and calculations, time management and organisation.

**What are the Learning Outcomes?**

| | Name | Details |
|---|---|---|
| **1** | Geophysics | Students will review and demonstrate ability to quantitatively describe fundamental physics in relation to Earth, including heat transfer, propagation of waves and fluid flow. |
| **2** | Astrophysics | Gained qualitative and quantitative understanding in radiation, matter, gravitation, astrophysical measurements, spectroscopy, stars, galaxies, and some aspects of cosmology. Worked through numerical problems in these areas of physics and applied principles to unseen examples. |

## Learning activities and Effort hours

| Learning activity | Total effort hours | Indicative effort hours per week |
|---|---|---|
| **1. Class sessions (Lectures, workshops, lab sessions, seminars etc.)** | 66 | |
| **2. Pre-class preparation and follow up study** | 66 | |
| **3. Work-based or Placement Hours** | | |
| **4. Formative assessments/ activities** | 10 | |
| **5. Feedback/ Feed forward sessions** | | |
| **6. Summative assessments (essays, dissertations, oral presentations, worksheets, lab reports etc.)** | 10 | |
| **7. Background reading** | 46 | |
| **8. Exams/ OSCEs** | 2 | |
| **9. Course Tests** | | |
| **10. Tutorials (Individual or small groups)** | | |
| **Total Hours =** | 200.00 | 0.00 |

## Learning Support Materials

**Should this module be exempt from requiring an online reading list?**

N

Link to Talis (https://uea.rl.talis.com/index.html)

## Formative Assessments

| Sequence | Assessment Type | Title | Deadline |
|---|---|---|---|
| FM1 | Formative Assessment | Poster abstract | 08/Nov/2024 |
| FM2 | Formative Assessment | Coursework – problem sets | |

## Summative Assessments

| Sequence | Assessment Type | Title | Deadline | Weighting | Method of submission | Method of return | Return date | Format and purpose of feedback |
|---|---|---|---|---|---|---|---|---|
| 001 | Written Assignment Groupwork | Poster | 13/Dec/2024 | 20 / 100 | Bb file submission point | VIA BLACKBOARD | | Written feedback. W help to deve student's science communicat skills. |
| **Further Details** | | | | | | | | |
| 002 | Semester 1 Exam | Semester 1 Exam | | 80 / 100 | Bb file submission point | VIA BLACKBOARD | | |
| **Further Details** | | | | | | | | |

## Attribute Development

On this module students will develop knowledge, insights and attributes that are readily transferable into future or current work settings. The attributes are articulated below to help understand how the module will help students to thrive on their course and prepare them for the world of work. These attributes are also articulated within the UEA Award.

**Academic excellence**

- [x] In-depth and extensive knowledge, understanding and skills in chosen discipline(s)
- [x] The ability to collect, collate, analyse and critically engage with a wide range of information sources, and evidence
- [ ] The ability to analyse and critically engage with a wide range of concepts and ideas

**Critical thinking & problem solving**

- [x] A capacity for independent, conceptual and creative thinking
- [ ] A capacity for informed argument and logical reasoning
- [ ] A capacity for problem identification and problem-solving

**Learning & personal development**

- [ ] A commitment to developing professional values, self-insight and capabilities
- [x] The ability to respond positively to constructive criticism and feedback from peers, tutors and colleagues

- [ ] Self-confidence and an ability to exercise own 'voice'

**Digital literacy and IT**

- [x] Confidently employ a range of digital technologies for academic and professional/ career development purposes
- [x] Use appropriate digital technologies and resources to locate diverse types of information for both academic and non-academic purposes
- [x] The ability to critically evaluate and engage with the information obtained

**Self-management & professionalism**

- [x] A capacity for taking responsibilities and ownership of actions
- [x] An ability to manage time effectively, including setting priorities, juggling competing demands and meeting deadlines
- [ ] An understanding of work cultures and practices, including work place professionalism

**Team working and leadership**

- [x] An ability to co-operate and collaborate with others, including working to shared aims
- [ ] An ability to take other viewpoints, have empathy for other people's position and give constructive feedback
- [ ] An ability to motivate and lead others, including taking the initiative and delegating when required

**Communication**

- [x] An ability to communicate in written form for different purposes, audiences and contexts
- [x] An ability to communicate in person for different purposes, audiences and contexts
- [ ] An ability to network effectively with others for specific purposes

**Applied numeracy and Technical proficiency**

- [x] An ability to perform routine calculations in daily tasks and in applied contexts
- [ ] An ability to analyse and interpret data and evidence
- [ ] Proficiency in skilled techniques used for academic and professional purposes

**Career management**

- [ ] A capacity to reflect on and articulate qualities, strengths and attributes
- [ ] The ability to research specific job and career areas
- [ ] An ability to present your experience and attributes positively to graduate employers

**Commercial awareness**

- [ ] A knowledge of the link between academic subjects and their commercial applications
- [ ] An understanding of business priorities and the needs of graduate employers
- [ ] The ability to understand and prioritise customer needs

**Innovation and enterprise**

- [ ] The confidence to introduce and establish something new
- [ ] The potential to take an idea through to its practical application

- [ ] The potential to apply an enterprising mind-set to situations

**Citizenship and stewardship**

- [ ] An understanding of your place within local and global communities
- [ ] An awareness of the need to manage shared and finite resources, including an appreciation of moral and ethical dimensions
- [ ] An ability to improve the lives of others and lobby for positive change through community and/or political engagement