



Module Specification

Atmosphere and Climate

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Part 1: Information

Module title: Atmosphere and Climate

Module code: USSKN4-15-2

Level: Level 5

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: The Earth 2023-24

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Pre-requisites: students must have already passed The Earth (USSJFB 30-1).

In this module students will focus on studying the Earth's atmosphere and its central role in climate change.

Features: Not applicable

Educational aims: See learning outcomes.

Outline syllabus: Specifically students will study:

Atmosphere Structure, Dynamics and Mixing

The structure and dynamics of the Earth's atmosphere, weather systems and .

Atmospheric Dynamics

The composition of the atmosphere, Earth surface-atmosphere interactions, atmospheric chemistry and pollution.

Global Climate

Detailed study of the atmospheric species and processes that contribute to climate change.

Palaeoclimate

Earth history, Palaeoclimate records, climate proxies and geochemical methods.

Climate predictions

Global Climate models (GCMs), climate feedbacks, risks, tipping points and future scenarios.

Experiential learning will be achieved through laboratory practicals, group fieldwork and hands-on atmospheric analyses. This will incorporate a diverse range of chromatographic and spectroscopic methods.

Specifically students will gain experience and develop skills in the following areas:

Air sampling techniques

Air pollution monitoring

Approaches for both the characterisation and quantification of atmospheric species.

Palaeoclimate methods, calculations and proxies

An introduction to climate modelling.

Part 3: Teaching and learning methods

Teaching and learning methods: See assessment strategy.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Discuss the physical and chemical characteristics of the atmosphere

MO2 Understand the key processes linked with changing climate and global environmental change

MO3 Understand and evaluate the risks associated with future climate change

MO4 Describe and compare the use of contemporary analytical and modelling techniques utilised in climate science

MO5 Gain practical experience in a range of analytical techniques for atmospheric samples

MO6 Gain experience of climate modelling

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 117 hours

Face-to-face learning = 33 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/usskn4-15-2.html) via the following link <https://uwe.rl.talis.com/modules/usskn4-15-2.html>

Part 4: Assessment

Assessment strategy: There are two main assessment methods that will be utilised during this module.

Assessment Task 1 – Examination (Online) with 24 hour submission window.

This module represents a core scientific module for those students who will be undertaking the Environmental Science programme and focussing on the atmosphere. As such the best way to assess a diverse range of underpinning theory and knowledge will be through a written examination at the end of the module. Tutorial sessions (run at the end of lecture sessions) will focus on preparing students for the written examination.

Assessment Task 2 – Workshop Report

Students will get experience of the full range of atmospheric science from monitoring to modelling. The workshop report will contain two sections linked with workshops undertaken on atmospheric monitoring and atmospheric modelling. The outputs from these workshops will feed in to the workshop report. Students will be required to collect, process and analyse large datasets using advanced software. Some of the data will have been collected by the students, in addition data.

Assessment tasks:

Examination (Online) (First Sit)

Description: Online exam (24 hour submission window)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Report (First Sit)

Description: Workshop report (2000 words)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4, MO5, MO6

Examination (Online) (Resit)

Description: Online exam (24 hour submission window)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Report (Resit)

Description: Workshop report (2000 words)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4, MO5, MO6

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Environmental Science [Frenchay] BSc (Hons) 2022-23

Environmental Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2022-23

Environmental Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2022-23

Environmental Science [Frenchay] MSci 2022-23

Environmental Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Environmental Science {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Environmental Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2021-22

Environmental Science {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2021-22