

Module Information

2022.01, Approved

Summary Information

Module Code	4401NATSCI
Formal Module Title	Introduction to Climatology and Meteorology
Owning School	Biological and Environmental Sciences
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Biological and Environmental Sciences

Learning Methods

Learning Method Type	Hours
Lecture	26
Practical	24
Seminar	4
Workshop	4

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	This module aims to provides an overview of the physical and dynamic nature of climatology, meteorology, and related aspects of oceanography.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Develop an in-depth understanding of the components of the Earth's climate system and their interactions.
MLO2	2	Understand the concept of weather forecasting and its main principles.
MLO3	3	Develop skills in acquiring and interpreting climatic data from observations and climate models.
MLO4	4	Evaluate how the earth's climate has changed during the instrumental period, to explain the factors responsible for this change, and to put this change in the context of the longer-term palaeoclimatic record.
MLO5	5	Develop the ability to critique issues related to climatology, including the scientific evidence of climate change.

Module Content

Outline Syllabus	Climatology in the world today Physical basis for Earth's climate system Atmospheric temperatures Moisture in the atmosphere Atmosphere-ocean interactions Weather systems of the mid-latitudes (air mass and synoptic climatology) Introduction to Meteorology Tropical climatology Detection of contemporary climate change and attribution of causes Glaciers as evidence of climate change Natural causes of climate change Reconstruction of past climates Greenhouse gases, climate models and climate change projections Climate change and the physical environment and climate change and the living world Applied climatology
Module Overview	In this module you will examine the main components of the Earth's climate system and their interactions as well as the principles of weather forecasting. It then discusses the applications of climatological principles on different societal sectors. Given the importance of global climate change on society this module provides you with an introduction to the many facets of contemporary climate change from a physical science perspective.
Additional Information	This module examines the main components of the Earth's climate system and their interactions as well as the principles of weather forecasting. It then discusses the applications of climatological principles on different societal sectors. Given the importance of global climate change on society this module provides an introduction to the many facets of contemporary climate change from a physical science perspective. Major topics include: atmospheric radiation, atmospheric moisture and precipitation distribution, atmospheric motions including air masses, front formation and cyclones, weather forecasting, extreme events, climate change and applied climatology. For the latter, the focus is on climate indices and the utility of applied climatology for purposes such as approximating heating and cooling costs and issues related to climate comfort, i.e., how humans have adapted to living in different climates through various home designs. Knowledge and understanding of the physical causes of contemporary climate change is provided in the module component on climate change, and this is set within a longer-term palaeoclimate context. Hence, climate change is explored with proxy records from the past, observations in the present, and with climate models into the future, looking at both natural and human influence.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping

Report	Data analysis & interpretation	40	0	MLO3, MLO5
Centralised Exam	Exam	60	2	MLO1, MLO2, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Alexandre Gagnon	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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