GEOG2004 Atmospheric Environment and Global Climate

TIMETABLE ARRANGEMENT: Annual; 1st Semester **CREDITS:** 6

COURSE TEACHER(S): Professor Jinbao LI

ASSESSMENT:

EXAMINATION 50 %	COURSEWORK 50 %
• 2 hours	• 4 individual lab exercises • 1 individual presentation • 1 individual project

OBJECTIVES:
This course provides a general introduction to the atmospheric environment in terms of the processes and interactions which take place and the resulting temporal and spatial manifestations in climate on Earth.

COURSE SYNOPSIS:
This course is divided into three major sections. In the first, the basic characteristics and features of the atmospheric environment are examined from the viewpoint of the basic physical and dynamical processes which occur in the atmosphere and between the atmosphere and the underlying surface. In the second, both the spatial and temporal dimensions of the resulting climate are explored at a range of scales to provide an understanding of the link between the processes occurring in the climate system and the diversity of climatic conditions which occur on Earth. In the last section, the interaction between humans and the climate system is explored. Various means of reconstructing and modelling the climate system are examined with a view to understanding the nature of past climates and the variety of potential future climates that might be possible.

LECTURE TOPICS:
• Physics and dynamics of the atmosphere
• Climate regionalisation
• Global climate: Past, present and future
• Basic statistics and KNMI Climate Explorer

RECOMMENDED READING LIST:

• Lutgens, F.K., & Tarbuck, E.J. (2014). The Atmosphere: An Introduction to Meteorology, 12th edition. New Jersey: Pearson Prentice Hall.
• Ahrens, C. D. & Henson, R. (2021) Meteorology Today: An Introduction to Weather, Climate, and the Environment, 13th edition. Boston: Cengage Learning.
• Wallace, J. M. & Hobbs, P. V. (2006) Atmospheric Science: An Introductory Survey, 2nd edition. Boston: Academic Press.

	Course Learning Outcomes (CLOs) After completing this course, students would be able to:	**Alignment with Programme** Learning Outcomes (PLOs)*						**Course Assessment Methods**
		1	2	3	4	5	6	
1	gain general knowledge about the atmosphere and atmospheric processes	✔	✔		✔			Lab exercises, oral presentation, project & exam
2	understand the spatial and temporal patterns of climate on Earth	✔	✔		✔			Lab exercises, oral presentation, project & exam
3	understand of the past, present and future changes in global climate	✔	✔		✔			Lab exercises, oral presentation, project & exam
4	acquire critical reading and writing skills			✔		✔	✔	Lab exercises, oral presentation, project & exam
5	develop data analysis/interpretation skills			✔		✔	✔	Lab exercises & project
6	think critically about the way in which the atmosphere works	✔	✔	✔	✔			Lab exercises, oral presentation, project & exam
7	think critically about climate change and its consequences	✔	✔	✔	✔	✔		Lab exercises, oral presentation, project & exam

*Geography Major Programme Learning Outcomes (PLOs)

In order to meet the demands and challenges in this dynamic and ever-changing world, the Department has designed a series of well-structured and contemporary courses to cater to the different interests of students. Its courses are designed to align with the University's educational aims which hope to nurture future generations not only with a critical and intellectual mindset, but also with a passion to contribute to society in general.

After completing the programme, Geography Major students should be able to:

PLO1 **critically analyse the geographical aspects of the relationship between people and the natural environment;**

PLO2 **demonstrate and develop an understanding of how these relationships have changed with space and over time;**

PLO3 **identify, collect and utilize primary and secondary data to investigate and analyse the issues and problems facing people, places and society;**

PLO4 **integrate, evaluate and communicate information from a variety of geographical and other sources;**

PLO5 **participate in promoting social, economic and environmental sustainability at the local, regional and global scales; and**

PLO6 **effectively apply a range of transferable skills in academic, professional and social settings.**