

COURSE CODE: ENS-444
COURSE NAME: Climatology
CREDIT HOURS: Theory = 3 Practical = 0 Total = 3
CONTACT HOURS: Theory = 48 Practical = 0 Total = 48
PREREQUISITE: None
MODE OF TEACHING: Three hours of lecture per week

COURSE DESCRIPTION:

The objective of this course is to provide know-how regarding Earth's climate and weather systems, processes and the relationships between the atmosphere and climate. Concepts of climate of Pakistan will also be provided.

TOPICS COVERED:

Week#	Topics
1	Introduction To Climatology and A Brief History
2	Weather and Climate
3	The Earth Four Spheres, Vertical Structure of The Atmosphere
4	Heat and The Earth's Atmosphere, Radiation and Climate
5	Solar Radiations, Mechanism of Heat Transfer
6	The Hydrologic Cycle
7	Condensation and Cloud Formation, Cloud Classification
8	Clouds and Vertical Motion in the Atmosphere
9	Midterm Exam – MSE
10	Air Pressure, Factors Affecting Air Pressure
11	Surface Winds, Local Winds
12	Global Circulation
13	Global Circulation
14	The Climate of Pakistan
15	Concept of Seasons in Classification of Climate

16	Concept of Seasons in Classification of Climate
17	Climatic Zones of Pakistan
18	End Semester Exam

Text and Material:

1. The Physics of Atmospheres, John Houghton, Cambridge University Press
2. The Atmosphere; An Introduction to Meteorology Fredreck K.Lutgens, Edward J. Tarbuck, 14th Edition (2018)
3. Atmospheric Chemistry and Physics - From Air Pollution to Climate Change Seinfeld, John H.; Pandis, Spyros, N. 3rd Edition. John Wiley & Sons, 2016

ASSESSMENT SYSTEM:

Theoretical/Instruction	100%
Assignments	10%
Quizzes	15%
Mid Semester Exam	25%
End Semester Exam	50%
Practical Work	0%
Lab Attendance	0%
Lab Report	0%
Lab Quiz	0%
Lab Rubrics	0%