

SMR 207: FUNDAMENTALS OF CLOUD PHYSICS AND ATMOSPHERIC POLLUTION

A COURSE STUDY GUIDE

1. Course Unit Summary

This study unit is level 2 course in Atmospheric science for learners taking undergraduate program in any science-based fields such as B.Ed Science, B.Sc. Meteorology and B.Sc. in Physics, Chemistry, Geology and any related sciences.

In this course unit, discussions on the following topics are provided: cloud formation processes; types and classification of clouds; Fogs; Weather modification and aspects related to air pollution are also covered.

2. General Course Unit Objectives

The aim of this unit is to equip students with knowledge and skills in cloud formation, dispersal and classification, precipitation processes, weather modification, air pollution types, sources, sinks, impacts as well as the management and control of air pollution principles.

3. Course Unit Outcomes

At the end of this unit, the student should be able to:

- Classify clouds
- Describe cloud formation process
- Identify types of precipitation and their formation process
- Describe the nature and sources of air pollution
- Outline the method of estimation of air pollution concentration levels
- Discuss the characteristics of air pollution including turbulent diffusion, and removal from the atmosphere
- Discuss the effects of air pollution on human, plants and animals including the green house effect
- Describe the principle of pollution management and control

4. Resources & references

- Microphysics of Clouds and Precipitation (Atmospheric and Oceanographic Sciences Library) by H.R. Pruppacher and J.D. Klett (Hardcover - Dec 31, 1996)
- Microphysics of Clouds and Precipitation: Reprinted 1980 by H.R. Pruppacher and J.D. Klett (Paperback - Mar 31, 1980)
- A Short Course in Cloud Physics (International Series on Natural Philosophy) by R.R. Rogers and M.K. Yau (Paperback - Jun 1989)
- Cloud Dynamics, Volume 53 (International Geophysics) by Jr., Robert A. Houze (Paperback - Mar 14, 1994)
- Microphysics of Clouds and Precipitation (Atmospheric and Oceanographic Sciences Library) by H.R. Pruppacher and J.D. Klett (Hardcover - Dec 31, 1996)
- Level 2 ODeL module: Fundamentals of Cloud Physics and Atmospheric Pollution

by Alfred Opere

5. Lecturers

Prof. J.K. Ng'ang'a, Prof. J.N. Muthama, Dr. Alfred Opere, Dr W Gitau