**MET 1202 Climatology (3 CU)**

**Description**

This course explains the significance of the sun and solar radiation receipts at a location, area or region. It introduces the concepts of the energy balance and how it determines climates as well as introducing local/regional factors that may affect environmental characteristics. The course illustrates the study concepts with a brief introduction to Africa’s and East Africa climates.

**Objectives**

The course will help the students to achieve the following objectives

* Understand the sun and its energy properties
* Describe the classification of different climates
* Explain some weather and climatic parameters that are of importance to the tropics

**Learning outcomes**

By the end of the course the student should know:

* The sun as the ultimate source of energy for the earth/atmosphere and the

factors affecting solar energy receipts and its distribution in the earth/atmosphere.

* Develop the energy balance model and its use in explaining climates.
* Local and regional factors that influence/determine weather and climates
* Weather phenomena and some extreme weather and events
* General introduction to Africa’s and East African Climates.

**Intellectual, Practical and transferable skills**

* Problem solving
* Analytical
* communication

**Teaching and learning patterns**

The mode of learning involves direct contact with students in form of lectures, Tutorials and assignments

**Indicative content**

* Solar radiation: Nature of bodies, Stefan-Boltzmann radiating body energy emission and Wein’s displacement laws: the Solar and Earth mean surface temperatures and their significance in climatology
* Factors affecting solar radiation in the atmosphere, radiation balance; the atmospheric temperature profile and reasons for the different profiles of the temperature layers.
* Development of the energy balance model approach to climate determination and its usage in interpretation of a region’s climate characteristics and hence its economic activities and settlement patterns and population density.
* Regional climate modifications by the meso-scale systems: land and sea breezes, mountain/valley winds; monsoonal systems
* Weather and climate characteristics, types of precipitation, cloud types and some extreme weather events (thunderstorms, lightening, fog, frost, cyclones, tornadoes, etc.)
* General climatology of Africa. and Climatology of East Africa

**Assessment Method**

The assessment method is structured to include course work, and final examination. Course work consists of assignments, reports and tests and accounts for 30% of the final grade. The final examination will account for 70% of the final grading

**Core Reference materials**

* **Roger G. Barry and Richard J. Chorley**: (1987) Atmosphere, Weather and Climate, 5th edition, *Methuen & co.*
* **Colin Buckle** (1996): Weather and Climate in Africa, *Longman publish*