**MET 2202 Weather Forecasting Principles I (3CU)**

**Description**

This course deals with basic weather forecasting principles for socio-economic applications.

**Objectives**

The course will help the students to achieve the following objectives

* Understand the reasons for monitoring weather and climate
* Describe the different tools used in weather forecasting
* Generate weather forecasts

**Learning outcomes**

By the end of the course, students should be able to;

* Describe the role/importance of weather forecast to the various sectors of the economy
* Identify ranges of weather forecasts available in the region
* List and describe the tools used in weather forecasting over this region
* List the sources of data used in weather forecasting
* Describe the role of media in dissemination of weather forecasts

**Intellectual, Practical and transferable skills**

* Creative and innovative
* Problem solving
* Analytical
* Communication

**Teaching and learning patterns**

* Use of practical examples and field trips
* Class discussions
* Lectures
* Group presentations

**Indicative content**

* Global, regional and national telecommunication networks for meteorological services and applications; structure and functions of the various components.
* Basic definitions in synoptic weather, aviation and ship codes, terms, phonetic alphabets used for transmission, observing and coding.
* Various ranges of weather forecasts
* Basic tools/techniques used in forecasting; plotting of codes on the surface weather charts, analysis and introduction to the main weather charts.
* Differences between confluence and convergence, diffluence and divergence, cross sections and time sections of the atmosphere.
* Data used to generate weather forecasts: Introduction to the use of other forecasting tools; meteograms, tephigrams and satellite pictures. Pilot balloon measurements, processing of pilot balloon data.
* Cloud classification and precipitation mechanism.
* Dissemination and applications of weather forecasts
* Practical: Plotting and interpretation of weather charts.

**Assessment Method**

The assessment method is structured to include course work, and final examination. Course work consists of assignments, reports, practicals and tests and accounts for 40% of the final grade. The final examination will account for 60% of the final grading

**Core Reference materials**

* **George E. P. Box and Gwilym M. Jenkins** (2008): Time Series Analysis: Forecasting and Control, *John Wiley*.

# Mike M.N. Mwebesa (1976): East African Observer's Handbook, (handbook of standard procedures for surface weather observing and recording of climatological data) Rev. ed. *East African Community,* *East African Meteorological Dept. in Nairobi.*

* **WMO** (1997)): Mesometeorology and Short-Range Forecasting, WMO bulletin, Vol 46.