

## **Regional Meteorological Training Centre, Oshodi, Lagos**

**Course code BIP 121**

**COURSE TITLE: UPPER AIR OBSERVATION**

**COURSE UNIT: 3**

**DURATION: 3 HOURS**

**COURSE INSTRUCTOR: NWANACHO C.**

### **COURSE CONTENT**

1. General – Units of measurements. Meteorological balloons: There are three types of balloon colours in use for the measurement of upper wind:- Red, blue and white colour. The state of the sky determines the colour of balloon to be used. Gases for inflation of Meteorological balloon helium, or hydrogen gas. Hydrogen generators for Meteorological purposes. Theory of upper-wind measurement. Care and handling of Meteorological balloons. Sizes of Meteorological balloons. The Pilot – Balloon Theodolite. Ceiling measurement using pilot balloon (determination of cloud base). Optical Theodolite using pilot balloon
2. Pilot Balloon Codes PART A, B, C, D,
3. Temperature Message Identifier TTAA Radiosonde Transmitter  
The weather elements observed are: Pressure, Temperature, Wind direction and speed, humidity and dew point.
4. Radio sounding of the upper atmosphere. General – units of measurement. The Principle of the radio sounding system: Principle of the radio sounding and ascent evaluation.

### **LEARNING OUTCOME/COMPETENCIES**

The students should be able to carry out sounding and the use of the instruments.

#### **Grading System**

Class attendance: 10%

Assignments and Test: 30%

Examination: 60%

**Regional Meteorological Training Centre, Oshodi, Lagos**

**COURSE CODE BIP 231**

**COURSE TITLE: PHYSICAL METEOROLOGY**

**COURSE UNIT: 3**

**DURATION: 3 HOURS**

**COURSE INSTRUCTOR: Oluwatosin H. I. (Mrs)**

**COURSE CONTENT**

1. Introduction to the subject
2. Definitions, Clouds, Fog and precipitation. Basic knowledge of their Formation. Fog classification and artificial rain, visibility, meteors.
3. Influence of the surface tension of rain drops and of the hygroscopicity of the nuclei on saturation pressure;
4. Process of raindrop formation.
5. Cooling of the air due to adiabatic and non-Adiabatic processes.
6. Cloud structure and evolution dynamics.
  - i. Frontally generated cloud
  - ii. Cumuliform clouds
  - iii. Orographic clouds
  - iv. International cloud classification
7. Static Electricity and Electrostatic phenomenon -
  - i. Elements of Atmospheric Optics and Electricity, Refraction, rainbow, Halo, Corona Blue sky.
  - ii. Transparency of the atmosphere. Types of atmosphere – Constant lapse rate, Homogenous, Isothermal and Adiabatic.
  - iii. Relationship between static electricity and atmospheric phenomena.
  - iv. Lightning discharge and thunderstorms.

**LEARNING OUTCOME/COMPETENCIES**

- To understand movement of air constituents
- To be able to identify clouds and their associated characteristics and formation

- To understand the processes leading to cloud formation and triggering processes/ propagation and regeneration
- To understand their formation and effect in the hazardous weather
- To appreciate the concept of atmospheric phenomenon
- To be able to identify hydrometeors and their method of observation

**Grading System**

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Assignments and Test: 30%

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