



**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**COURSE CODE: BIO 404**

**COURSE TITLE: SYSTEMATIC BIOLOGY**

<b>COURSE GUIDE</b>
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**BIO 404  
SYSTEMATIC BIOLOGY**

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### **Introduction**

BIO 404: Systematic Biology is a one-semester, 3 credit- hour course in Biology. It is a 400 level, second semester undergraduate course offered to students admitted in the school of science and technology, school of education that are offering Biology or related programmes.

The course guide tells you briefly what the course is all about, what course materials you will be using and how you can work your way through these materials. It gives you some guidance on your Tutor- Marked Assignments.

There is/are Self-Assessment Exercise(s) within the body of a unit and/or at the end of each unit. The exercise(s) is/are an overview of the unit to help you assess yourself at the end of every unit.

### **What you will learn from this Course**

This course contains twenty one (21) units which cover a generalized introduction to biosystematics which is an attempt to produce the system of nomenclature by which more relationship mainly the phylogenetic relationship could be exclusively rural. However, the term has not been interpreted as it was before. Basically it has been interpreted as application of genetical and cytological criteria, and particular in the description of the basic limit of classification.

Systematic has been in use to mean the branch of biology i.e. concerned with the comparative studies of organisms and all relationships among them. A relationship can be defined as a statement made about two subjects i.e. either true or false. For example a plant may be larger than each other or may not; that a density flower looks exactly like a sun flower is a statement which may be either true or false, establishing a relationship.

### **Course Aims**

The aim of this course is to provide a generalized phylogenetic relationship or relationship of descent which indicates the degree to which two individuals are related to a common ancestor; relationship of similarities or phenetics relationship, this indicates the degree to which two individuals look alike not only in their external morphology but in all their other facts e.g. anatomy; special geographic relationship which indicates how closely to which two individuals are situated to each other and trophic relationship which indicates interdependence to what extent to which two individual plants depend on each other.

### **Course Objectives**

In addition to the aim of this course, the course sets an overall objective which must be achieved. In addition to the course objectives, each of the units has its own specific objectives. You are advised to read properly the specific objectives for each unit at the beginning of that unit. This will help you to ensure that you achieve the objectives. As you go through each unit, you should from time to time go back to these objectives to ascertain the level at which you have progressed.

By the time you have finished going through this course, you should be able to:

Understand the science of identifying, naming, and classifying all plants. The students should know which plants are related to one another in order to predict their properties.

### **Working through this Course**

In this course, you will be advised to devote your time in reading through the material. You would be required to do all that has been stipulated in the course: study the course units, read the recommended reference textbooks and do all the unit(s) self-assessment exercise(s) and at some points, you are required to submit your assignment (TMAs) for assessment purpose. You should therefore avail yourself of the opportunity of being present during the tutorial sessions so that you would be able to compare knowledge with your colleagues.

### **Course Materials**

You are to be provided with the two major course materials. These are: Course Guide

### **Study Units**

The course comes with a list of recommended textbooks. These textbooks are supplement to the course materials so that you can avail yourself of reading further. Therefore, it is advisable you acquire some of these textbooks and read them to broaden your scope of understanding.

### **Study Units**

This course is divided into 4 modules with a total of nineteen units which are divided as follows:

Module 1:

Unit 1: Introduction to Systematic Biology

Unit 2: Historical Background of Classification I

Unit 3: Historical Background of Classification III

Unit 4: Historical Background of Classification III

Unit 5: Classification I

**Unit 6: Classification II****Module 2:**

Unit 1: Classification III

Unit 2: Population Concept

Unit 3: Plant Nomenclature

Unit 4: Principles of Plant Taxonomy

Unit 5: Sources of Taxonomic Evidence I

**Module 3:**

Unit 1: Sources of Taxonomic Evidence II

Unit 2: Sources of Taxonomic Evidence III

Unit 3: Sources of Variation

Unit 4: Natural Selection

Unit 5: Random Events

**Module 4:**

Unit 1: Isolation and the Origin of Species

Unit 2: Hybridization

Unit 3: Polyploidy and Apomixis

Unit 4: Specimen Preparation and Herbarium Management I

Unit 5: Specimen Preparation and Herbarium Management II

**Textbooks and References**

I shall like to recommend that you reference the underlisted textbooks as the course progresses:

Bessey, C.E.(1915). Phylogenetic Taxonomy of Flowering Plants, Ann.  
Mo. Bot. Gard., 2: 109-164.

Core, E.L.(1955). Plant Taxonomy, Prentice-Hall, Englewood Cliffs, N.J.,  
Pp. 9-61. (An excellent history of plant taxonomy).

Gardner, E.J. (1972). History of Biology, 3ed., Burgess, Mineapolis.

Hutchinson, J.(1969). Evolution and Phylogeny of Flowering plants,  
Academic Press, London, 400pp.

Samuel, B.J. and Arlene, B.L. (1986). Plant Systematics. McGraw-Hill,  
Inc, San- Francisco. 512pp.

**Assessment**

There are two components of the assessment for this course:

The Self-Assessment Questions (SAQs) or Exercise

The Tutor-Marked Assignment (TMAs)

The End of Course Examination

**Self Assessment Questions (SAQ)**

The exercise within each unit is/are meant to probe your understanding of the concept in the unit. It is non-grading and as such does not add up to top the grade in the course.

**Tutor-Marked Assignment (TMA)**

The TMA is the continuous assessment component of your course. It accounts for 30 percent of the total score you will obtain in this course.

**Final Examination and Grading**

The course is to be concluded by this examination. The final examination constitutes 70 percent of the whole course. You will be adequately informed of the time of the examination. The examination will consist of questions which reflect all the basic concepts you would have learnt through the duration of the course.

**Summary**

This intends for you to have an underlying knowledge of the similarities and differences in the external features, ecological adaptations of plants and animals. By the time you complete this course, you will be able to answer conveniently questions that borders on the:

- Phases of Plant systematics
- Plant Nomenclature
- Principles of Plant Taxonomy
- Sources of Taxonomic Evidence
- Specimen Preparation and Herbarium Management.

I wish you success in this course.

