

Biology 2201
Unit Two : Biodiversity
Learning Outcomes

Section One : Classification

- explain how scientific knowledge evolves as new evidence comes to light and as laws and theories are tested and subsequently restricted, revised, or replaced
- develop a list of characteristics that differentiate living and nonliving things (cells, biogenesis, growth and development, metabolism, water requirement, organic compound production, reproduction with inheritance and adaptations)
- explain how scientific classification systems have developed
- list and describe the seven major categories of Linnaeus' classification system... (i) kingdom, (ii) phylum, (iii) class, (iv) order, (v) family, (vi) genus, (vii) species
- explain the advantages of binomial nomenclature demonstrate how to use a taxonomic key to group and identify an organism
- identify limitations of a biological classification system and identify alternative ways of classifying
- examine the common names of some species of organisms and show the inadequacies and language problems associated with this method of identification

Creating A Dichotomous Key **CORE LAB #3, pg 110 -111**

STSE : *Modern Classification Techniques*

- explain why a virus does not fit neatly into the existing classification system
- explain how organisms are classified using: (i) radioactive dating, (ii) biochemical information, (DNA/protein comparisons), (iii) structural information, (iv) comparative embryology, (v) cellular structure, (vi) behaviour
- describe how classification systems improved as a result of the development of modern techniques

Section Two : Diversity Among Living Things

- describe the anatomy and physiology of viruses and organisms from each kingdom
- identify the general characteristics (cell type, nutrition, body form, reproduction, locomotion) that distinguish the members of the six recognized kingdoms (Bacteria, Archaea, Protista, Fungi, Plantae, Animalia) from each other.
- identify examples of members of each of the Kingdoms
- describe the differences that exist between the major groups of plants (bryophytes, ferns, gymnosperms and angiosperms)
- explain why angiosperms are the most diverse plant group...1) the assistance of animals, wind, and water in pollination; 2) the presence of structures in plants specific to attracting certain animal pollinators whom the plants supply with food; 3) the way seeds are protected; 4) the function of fruits and specialized structures in seed dispersal, and 5) the presence of specialized tissues in plants to help them survive heat, cold, and drought.
- describe the differences that exist between the invertebrate phyla (symmetry, body cavity, reproduction, digestion) **Table 3: Invertebrates**
- describe the differences that exist between the vertebrate taxa (symmetry, body cavity, circulation, respiration, reproduction, endoskeleton) **Table 4: Vertebrates**
- explain why arthropods are the most successful phylum of animals
- explain the life cycle of a sample organism from each kingdom, including a representative virus... (i) Virus - "T4", (ii) Bacteria/Archaea - "*E. coli*", (iii) Protista - "Plasmodium", (iv) Fungi - "Rhizopus", (v) Plantae - "Fern", (vi) Animal - "Frog"