

# **Pre-university Remedial Program for the 2014 E.C. ESSLCE Examinees**

## **BIOLOGY Module**

**Prepared by:**

### **Task force**

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**February, 2023**

**Addis Ababa, Ethiopia**

**Subject: BIOLOGY**

**Duration: 5 months**

**Credit hour: 4**

### **Selected units**

**Unit 1:** The science of biology (4 hrs.)

**Unit 2:** Biochemical molecules (9 hrs.)

**Unit 3:** Cell biology (10 hrs.)

**Unit 4:** Microorganisms (10 hrs.)

**Unit 5:** Genetics (10 hrs.)

**Unit 6:** Evolution (5hrs.)

**Unit 7:** Biotechnology (6hrs)

**Unit 8:** Human biology and health (12 hrs.)

**Unit 9:** Food making and growth in plants (6 hrs.)

**Unit 10:** Ecology and conservation (8hrs)

### **Unit contents**

#### **Unit 1: The science of biology (4 hrs.)**

1.1. The methods of science

1.2. Tools of the biologist

Unit summary

Review questions

#### **Unit 2: Biochemical molecules (9hrs.)**

2.1. Inorganic molecules

## 2.2. Organic Molecules

Unit summary

Review questions

### **Unit 3: Cell biology (10 hrs.)**

3.1. Cell theory

3.2. Types of cell

3.3. Parts of the cell and its function

3.4. The cell and its environment

3.5. Cellular respiration

Unit summary

Review questions

### **Unit 4: Microorganisms (10 hrs.)**

4.1. Introduction to microorganisms

4.2. Beneficial microorganisms

4.3 Pathogenic microorganisms

Unit summary

Review questions

### **Unit 5: Genetics (10 hrs.)**

5.1. DNA and chromosome structure

5.2. DNA replication

5.3. Protein synthesis

5.4. Mitosis and meiosis

5.5. Mendelian inheritance

5.6. Mutations

Unit summary

Review questions

### **Unit 6: Evolution (5hrs.)**

6.1. Theories of origin of life

6.2. Theories of mechanisms of evolution

6.3. Speciation through natural selection

6.4. Modern theories of evolution

Unit summary

Review questions

### **Unit 7: Biotechnology (6hrs.)**

7.1. Scope and definition

7.2. Agricultural biotechnology

7.3. Medical biotechnology

7.4. Industrial biotechnology

7.5. Environmental biotechnology

Unit summary

Review questions

### **Unit 8: Human biology and health (12 hrs.)**

8.1. Food and nutrition

8.2. Non communicable diseases

8.3. The digestive system

8.4 The respiratory system

8.5. The circulatory system

8.6. The nervous system

8.7. Sense organs

8.8. Endocrine glands

8.9. The reproductive system

Unit summary

Review questions

### **Unit 9: Food making and growth in plants (6hrs.)**

9.1. Plant organs

9.2. Photosynthesis

9.3. Transport in plants

9.4. Response in plants

Unit summary

Review questions

## **Unit 10: Ecology and conservation of natural resources (8 hrs.)**

10.1. Definitions

10.2. Cycling matter through ecosystems

10.3. Ecological succession

10.4. Biomes

10.5. Conservation and Biodiversity

10.6. Vegetation and wildlife

10.7. Global warming and air pollution

Unit summary

Review questions

## **Mode of delivery**

1. Classroom lecture
2. Practical activities

## **Mode of assessment**

1. Continuous assessment (assignment, tests, quiz)
2. Model exam (National or cluster level) 15 days before final exam
3. Standardized final exam for higher education entrance

## **Additional reading**

- Grade 9-12 Biology textbooks