

Biology and technology unit one	MLC
1.1 Renowned Ethiopian biologists (page 1)	• Name at least one renowned Ethiopian biologist. • Explain the contributions of these Ethiopian biologists to
1.2 Biological research	• Explain how scientific institutions contribute to scientific research. in Ethiopia • Name some Ethiopian institutions involved in biological research. (page 7) • Explain the activities and contributions of some of these Ethiopian research institutions.
Human biology and health Unit 3	
3.1 Food and nutrition (page 51)	• List the main sources of some of the vitamins and minerals needed by the human body. • list the major nutrients needed by the human body and their sources - Carry out laboratory tests to identify different nutrient group in a food sample. • Explain the concept of a balanced diet and what it involves. • Define nutrition and malnutrition and describe the effects of malnutrition on the human body. • Understand the concept of height/weight tables and how they can be used to help maintain a healthy body mass. • Analyse a local diet and if necessary suggest ways in which it might be improved to become more balanced.
3.3 The respiratory system (page 82)	• Explain the importance of breathing in humans. • Describe the structure and functions of the human respiratory system. • Examine the structure of a lung from an animal such as a cow or sheep. • Explain the mechanism of breathing using a lung model. • Explain the process of gas exchange. • Demonstrate the presence of CO₂, water vapour and heat in exhaled air. • Compare the composition of inhaled and exhaled air. • List the factors which affect breathing and explain how they affect it. • Explain the effects of cigarette smoking and inhaling gaya, suret and shisha on health and on the economy of the family. • List the methods of maintaining the hygiene of breathing. • Describe the steps followed during artificial respiration and be able to demonstrate these steps.

3.2 The digestive system (page 69)	• Label a diagram of the human digestive system. • Describe the functions of the structures of the human digestive system. • Define enzymes and describe their role in the process of digestion. • Describe the structure of the teeth and explain their importance. • Describe the processes of digestion in the mouth, stomach and small intestine. • Demonstrate that starch digestion begins in the mouth using saliva and bread. • Explain how the products of digestion are absorbed and assimilated by the body. • Discuss constipation, care with canned, bottled and packed foods and food hygiene as issues of digestive health.
3.5 The circulatory system (page 104)	• Explain how oxygen and nutrients are transported in the blood. • Indicate the structures of the heart on a diagram/model. • Explain the functions of the structures of the heart. • Examine a mammalian heart using fresh or preserved specimens. • Take your own pulse, counting the heartbeats using your fingers. • List the three types of blood vessels. • Explain the functions of the blood vessels. • Name the components of the blood. • Tell the functions of the components of the blood. • List the four blood groups. • Indicate the compatibility of the four blood groups. • Explain the causes and prevention of anaemia and hypertension.

Micro-organisms and disease unit 4

Section	Learning competencies
4.1 Micro-organisms (page 124)	• Define micro-organisms and list the main types. • Explain the useful and harmful effects of some micro-organisms. • Explain how vaccines are made, how they work and their importance. • Describe the methods used to control micro-organisms. • Distinguish between disinfectants, antiseptics and antibiotics. • Describe how to grow a bacterial culture and show simple staining methods of micro-organisms. • Explain how vaccination works and evaluate the impact of vaccination on diseases in Ethiopia.

4.2 Diseases (page 137)	• Explain the role of parasites in causing disease. • Describe the causes, symptoms, methods of transmission, prevention and control of a tapeworm infection. • List the causes of tuberculosis, AWD, cholera and typhoid, and describe the signs and symptoms of these common infectious diseases. • Explain how tuberculosis, AWD, cholera, typhoid and gastroenteritis are spread from one person to another and the methods of prevention and controlling them. • Define the term vectors. • Explain the effects of the <i>Anopheles</i> mosquito and malaria on the health of human beings and its methods of transmission, prevention and control. • Describe the way in which behaviour and lifestyle choices affect the spread of STDs. • State signs and symptoms, causative agents, methods of transmission, methods of limiting spread and possible treatment of the following infectious diseases: gonorrhoea, syphilis and chancroid. • State the risks of taking self-prescribed medicines. • Explain how both modern and traditional medicines should be used and handled, and discuss the advantages and disadvantages of both.
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Classification Unit 5

5.1 Principles of classification (page 171)	• Explain the need for classification. • Define species as a group of individuals able to breed successfully with one another. • Describe the system of binomial nomenclature developed by Linnaeus. • Explain how organisms are given scientific names. • Write scientific names properly and give examples. • Classify some common plants and animals, including humans, using their scientific names.
5.2 The five kingdoms (page 178)	• Explain the five-kingdom classification system. • Describe the kingdoms of the Monera, Protista and Fungi and give examples of organisms from each one. • Describe the kingdom Plantae and explain its major divisions, giving examples. • Classify angiospermes into monocots and dicots and explain the differences between them. • Describe the kingdom Animalia and explain its major phyla, giving examples. • Group animals into vertebrates and invertebrates and explain the differences between them. • Classify the vertebrates into five classes and give examples of each.

Environment Unit 6

6.2 Food relationships (page 204)	• Define phototrophs, heterotrophs and chemotrophs. • Explain food chains using diagrams. • Explain food webs using diagrams. • Explain pyramids of biomass using diagrams. • Explain pyramids of energy using diagrams.
6.4 Adaptations (page 218)	• Explain the need for adaptation. • Describe plant adaptations with examples. • Describe animal adaptations with examples.

Grade 10

Unit one

Section	Learning competencies
1.1 What is biotechnology? (page 1)	• Define biotechnology. • Discuss the significance of biotechnology. • Explain some of the traditional uses of biotechnology, for example, in preparing bread, yoghurt, cheese and beer.
1.2 New applications of biotechnology (page 7)	• Identify new applications of biotechnology in agriculture, food production, medicine and energy production.

Unit 2 Heredity

- Only mitosis should be considered

2.3 Heredity and breeding (page 45)	• Describe methods of breeding farm animals and crops. • Explain the importance of selective breeding for society. • Explain the difference between selective breeding and cross-breeding. • Give examples of selective breeding from your own experience.
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3.1 The nervous system (page 53)	• Name the parts of the nervous system. • Explain the structures and functions of the human nervous system. • List the three types of neurons, indicate their structures and explain their functions. • Describe an action potential and the passage of a nerve impulse along a neuron with examples. • Describe a synapse and how an action potential crosses it. • Describe neurotransmitters with examples. • Explain how the brain is protected and compare the functions of the fore, mid and hind brain. • Describe the reflex arc, mention the structures involved and compare simple and conditioned reflexes. • Demonstrate at least two examples of reflex actions such as knee jerks and blinking. • Define substance abuse, explain its effects, its status in Ethiopia and possible preventative measures. • Give examples of drugs abused in the locality. • Express willingness to conform to a drug-free lifestyle.
3.2 Sense organs (page 76)	• Indicate the structures of the human eye, ear, skin, tongue and nose using diagrams or models, and describe their functions and methods of caring for them. • Show the structures of the eye using a sheep's or cow's eye. • Describe image formation and accommodation. • Demonstrate the blind spot. • List common eye defects in humans and explain their causes and the available corrective measures. • Explain how balance is maintained by the inner ear. • Identify the taste areas of the tongue. • Conduct an experiment to prove that the actual taste of food is a mixture of taste and smell. • Draw and label the smelling organ. • Draw and label the structure of the skin.
3.3 The endocrine glands (page 93)	• Define glands as structures that produce hormones or other secretions and distinguish between exocrine and endocrine glands. • Locate the position of the main endocrine glands and describe their functions. • State the cause and treatment of goitre. • State the cause and treatment of diabetes mellitus. • Describe the menstrual cycle and the associated changes.
3.4 Reproductive health (page 108)	• List the different birth control methods and explain how each one works. • Describe female genital mutilation as a harmful traditional practice. • Describe the symptoms and incubation period of HIV/AIDS. • Explain how AIDS is currently treated. • Demonstrate life skills that will help you prevent the spread of HIV/AIDS.

Food making and growth in plants

Unit 4

4.1 The leaf (page 142)	• Label the internal structures of leaves. • Explain the functions of the internal structures of leaves. • Use the microscope to study the internal structures of leaves.
4.3 Transport (page 158)	• Explain water uptake by the roots. • Explain the mechanism of water movement in plants. • Describe transpiration, the factors affecting it and its implications for agriculture. • Demonstrate water transport in plants using simple experiments. • Explain the mechanism of uptake of mineral salts through roots. • Describe the movement of organic materials in the phloem.

Conservation of natural resources Unit 5

5.1 Definition of resources (page 183)	• Define natural resources. • Define renewable and non-renewable resources. • Classify natural resources as renewable and non-renewable. • Define conservation as the protection and preservation of our natural environment.
5.3 Vegetation (page 188)	• State some uses of vegetation. • Discuss the impact of human activity on natural vegetation. • Discuss how Ethiopian vegetation was affected in history. • List some of the endemic vegetation species in Ethiopia. • Discuss methods of conservation of vegetation. • Narrate how Ethiopian vegetation was affected in history.
5.4 Wildlife (page 192)	• State the uses of wildlife. • Describe the effects of humans on wildlife and its status in Ethiopia. • List at least five endemic wildlife species of Ethiopia. • Discuss methods of conservation of wildlife and the uses of National Parks of Ethiopia. • List at least five national parks of Ethiopia and mention some of the common species that exist in each of the National Parks.
5.5 Air (page 198)	• Explain the causes of air pollution. • Explain the effects of air pollution. • Define global warming. • State the causes of global warming. • Explain the methods of preventing global warming.

Dear our students, I think all the subject matters you came across from grade 9-12 are vast enough to cover. But being systematic can help you to cover.

This study guide enables you to go through contents of biology from grade 9-12. More over all contents of grade 11 and 12 are bases and you should be certain that you can answer questions from these grade levels.

Believe me, you will answer all biology questions if you are confident, avoid fear, punctual. Last but the least this is the batch that determine the future fate of the school.

I have a dream, we will be the winner!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!