

National Curriculum for
PHYSIOLOGY
AND
HYGIENE

Grades IX–X
2007



GOVERNMENT OF PAKISTAN
MINISTRY OF EDUCATION
ISLAMABAD

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INTRODUCTION

Physiology and Hygiene are the Sciences and practices of maintaining good health. Health is a state of complete physical, mental and social well being and not merely the absence of disease or illness. To be healthy it is necessary to have safe healthy surroundings to drink clean water, to eat nourishing food, to have a good standard of personal cleanliness, to be immunized against certain diseases and to be able to relate happily to other people. In developing countries, some of these factors are difficult to achieve because of lack of money and knowledge, nevertheless there is much that people could do for themselves with a little help and education.

Physiology relates to the function or use of the different parts of the body, the work which the parts do and how they do it and of their relations to one another and to the body as a whole.

Hygiene is the knowledge concerning healthful living. The need for Hygiene arises from the fact that we do not often find ourselves in an ideal environment. Life is a process of continually adapting one self to the surroundings.

"Healthy living" is based on the harmonious adjustment of one's habits to the nature and plan of the body and that the best preparation for such living is a correct understanding of the physical self. To derive strength equal to the daily task to experience the advantages of health and avoid the pain, inconvenience and danger of disease to live out contentedly and usefully the natural span of life, absence of all these factors create different phases of one great problem that is the problem of properly managing or caring for the body. To understand and implement the solution to this problem is the main reason why the Human body and Hygiene are studied. The body is studied from three standpoints: structure, use of parts, and its care or management. This divides the main subject under three headings, known as Anatomy, Physiology, and Hygiene. However, in this document the emphasis lies on Physiology that is use of parts of body and Hygiene the proper care of the body with a basic understanding of Anatomy, which relates to the construction of the body.

Hygiene relates to the "laws of health." Hygiene is said to be personal, when applied by the individual to his own body domestic, when applied to a small group of people, as the family and public or general when applied to the community as a whole or to the race.

Knowledge of Anatomy and Physiology is the foundation necessary for a practical understanding and application of the study of Hygiene. Proper management of the body means health and it means the capacity for work and for enjoyment. Not only one should seek to

preserve his health from day to day, but also he should so manage his body as to use his powers to the best advantage and prolong as far as possible the period during which he may be a capable and useful citizen.

Government of Pakistan is committed to bring about 'Quality Assurance' in the Education Sector. The Ministry of Education undertook the massive task of reviewing the National Curriculum for all the subjects across all grade levels, which included the curriculum for Physiology and Hygiene as well. No nation can progress without attaining high standards in education, and it was a great challenge to achieve quality education by upgrading curricula as well as utilizing maximum available resources. In the words of Quaid-e-Azam, "**It is the right type of education that we have to impart to our future generation.**" The Government has taken important steps to revise the whole education system with the aim of teaching in accordance with the International Standards.

The National Curriculum Development Committee for Physiology and Hygiene for grades IX-X was formed and comprised of a rich milieu of scholars, subject experts and teachers from all over the country. This working committee held a number of meetings, deliberated and reflected during and after the meetings in order to prepare and present a document in line with laid down objectives/policies developing a vital and relevant curriculum to the modern socio-economic, technical and professional needs of the country.

This document is based on three broad categories of activities that connect all scientifically literate people:

- knowing and using scientific knowledge
- constructing new scientific knowledge
- reflecting on scientific knowledge

Following strategy was adopted in designing/revising the curriculum:

- identification of areas requiring improvement
- identification of standards for selected areas
- arriving at capacity profile, based on development of knowledge, skills, and attitudes
- study of foreign curricula for comparison and guidelines
- preparation of detailed contents in the light of competencies to be developed
- drafting of contents, learning outcomes and practicals
- preparation of a scheme for implementing the curriculum

After studying the revised Physiology and Hygiene Curriculum, students will be well informed about the key concepts of Physiology and Hygiene. They will be:

- able to think scientifically and use subject content knowledge to make decisions about health-related problems
- able to create new knowledge through reading, discussion and research
- become familiar with the natural world and be respectful of its unity, diversity, frailty and interrelatedness
- able to critically analyze statements and debates that claims to have a scientific base

The structure of the course outline is based on coherent sequencing of the subject matter keeping in mind the intellectual capacity of the students. The course structure is comparable to the international standards and is structured to provide self directed learning, critical thinking and using evidence base as a method of inquest in a way that motivates curiosity and concentration.

Emphasis has been given to encourage process-investigating skills, Laboratory work, analytical abilities and application of concepts, useful in real life situations for making Physiology and Hygiene learning more applicable and interesting.

Keeping the practical needs of the teachers and school administrators in mind, **Student-Learning Outcomes** have been provided chapter wise. It is hoped that this revised curriculum will meet the challenges of the 21st century in grooming the younger generation into knowledgeable, self-motivated, responsible and creative citizens of this scientific world.

AIMS AND OBJECTIVES

AIMS

The revised curriculum of Physiology and Hygiene provides a broad view of the current knowledge on how the human body works.

The aims are to:

- develop knowledge of the essential facts of Physiology with special reference to the life and health of the human body.
- make sure that assessment should be progressive reflecting a holistic approach to ensure that curriculum purpose is met. To assist in ensuring validity, reliability and fairness, assessment instruments should include practical exercises and assignments.
- impart opportunities for students to develop the attitudes on which scientific investigation depends.
- promote hygienic science as an activity that is carried out by all people as part of their every day life.
- encourage students to consider the ways in which people have used scientific knowledge and methods to meet particular needs.
- facilitate students to explore issues and to make responsible and considered decisions about the use of this subject in their environment.
- develop the ability to apply understanding of subject related problems including those from every day life, and to handle those problems in rational ways.
- provide precise knowledge and skills underpinning competency.
- deliver simple, easy lessons, in order to impart the rudiments of Physiology and Hygiene
- provide latest knowledge with examples of practical application in daily life.
- develop a scientific attitude towards problems in daily life
- develop students' interest in understanding of the knowledge and processes of science that will form the basis of their future education and careers.

OBJECTIVES

- motivate student's curiosity and develop their interest in hygiene and the human body.
- provide solutions to basic problems related to the world around them.
- propagate inquiry-based and student-centered science education.
- relate interdisciplinary learning.

- plan an investigation and implement the planned procedures.
- use motor skills required to carry out the planned procedures
- comprehend that biological knowledge and scientific approaches have relevance to many situations in everyday life.
- stimulate students to demonstrate ways in which they can enhance and maintain their health and well-being.
- cite and explain or interpret scientific ways by which healthy life can be attained.
- specify the number of emotive issues in the area of Physiology and Hygiene students will understand how to play a positive, active role in promoting the health of their families.
- promote positive health practices within the school and community, including how to cultivate positive relationships with their peers.
- foster the understanding of the variety of physical, mental, emotional and social changes that occur throughout life.
- acquiring information regarding products and services that may be helpful or harmful to their health.

This document has been divided into the following components in order to achieve the desired aims and objectives:

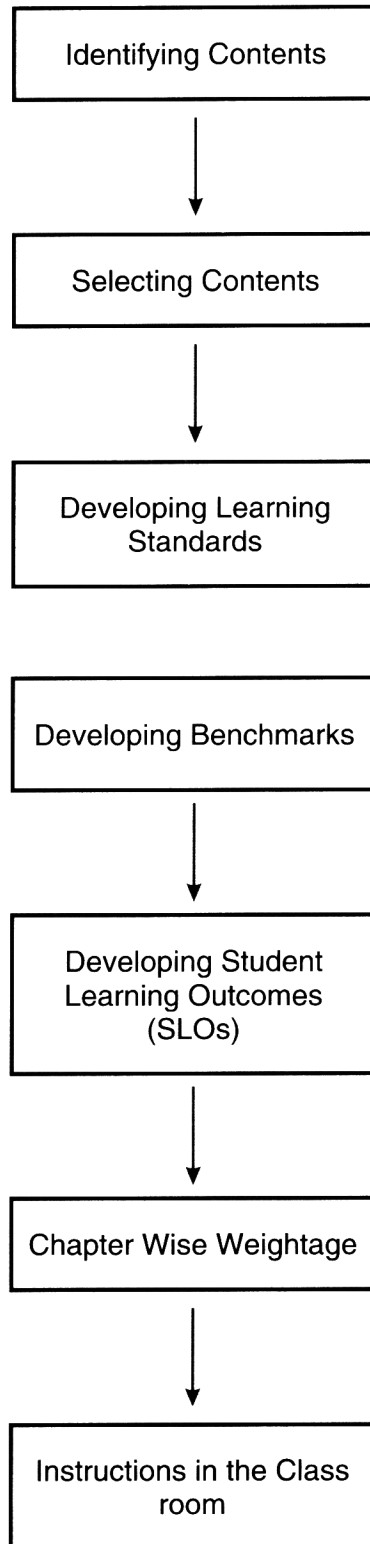
Curriculum strategy

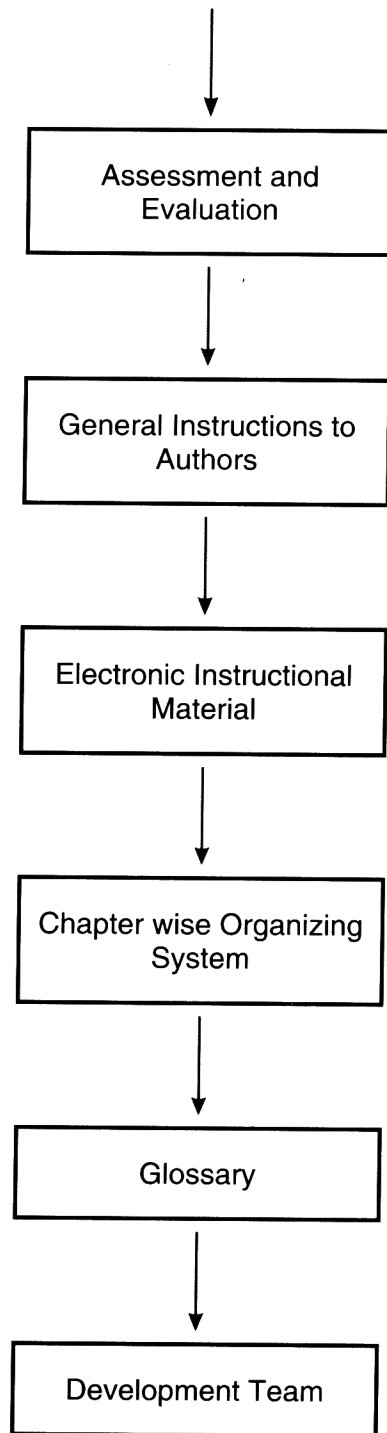
- The inquest based Curriculum
- The student-centered Curriculum
- An outcome-focus Curriculum

Curriculum Development Process:

- Identifying Contents and Selecting Contents
- Developing Learning Standards
- Developing Student Learning Outcomes(SLOs)

Curriculum Development Process





STANDARDS AND BENCHMARKS

In the 21st century, students will remain the most important human resource. In the new millennium curricula, changes need to be relevant to the present day technological era. It is critical that academic policy makers and educators prepare students to meet the challenges of changing global society and establish new paradigms of student learning.

This includes preparing students for self-analysis and for future roles of team workers. Equally important is that they develop creativity and innovation in building knowledge.

STANDARDS

They are what students should know and be able to do. Standards are broad descriptions of the knowledge and skills students should acquire in a subject area. The knowledge includes the important and enduring ideas, concepts, issues and information. The skills include the ways of thinking working communication, reasoning and investigating that characterize a subject area. Standards may emphasize interdisciplinary themes as well as concepts in the core academic subjects.

Standards are based on:

- **Higher Order Thinking:** Instruction involves students in manipulating information and ideas by synthesizing, generalizing, explaining or arriving at conclusions that produce new meaning and understanding for them.
- **Deep Knowledge:** Instruction addresses central ideas of a topic or discipline with enough thoroughness to explore connections and relationships and to produce relatively complex understanding.
- **Substantive Conversation:** Students engage in extended conversational exchanges with the teacher and / or peers about subject matter in a way that builds an improved and shared understanding of ideas or topics.
- **Connections to the world beyond the grade room:** Students make connections between substantive knowledge and either public problems or personal experiences.

BENCHMARKS

They indicate what students should know and be able to do at various developmental levels. Our benchmarks are only for Physiology and Hygiene taught for grade IX-X

LEARNING OUTCOMES

They indicate what students should know and be able to do for topic in the subject of Physiology and Hygiene The learning outcomes sum up the total expectations from the student. Within this document, the Learning Outcomes are presented under three subheadings:

- understanding
- skills development
- science and technology

The standards and the accompanying Benchmarks will assist in the development of comprehensive curriculum, foster diversity in establishing high quality learning outcomes and provide an accountability tool to individuals involved in the education marketplace. These provide a common denominator to determine how well students are performing and will assure that all students are measured on the same knowledge and skills using the same method of assessments.

STANDARDS

1. Using Scientific Knowledge

Students well versed in the study of Physiology and Hygiene are better able to understand and appreciate the physical and natural environment around them and are also better able to make calculated decisions and take knowledgeable actions. Activities that require scientific thought include knowledge and understanding of the well being of human being. The observation of phenomenon of growth and development and the design of courses of action that help individuals adapt to and modify (for better) the world around them.

Standard 1.1

Develop an understanding of personal and community health, population growth, environmental quality, natural and human induced hazards in local and national settings.

2. Reflecting on Scientific Knowledge

Students well versed in the study of the Physiology and Hygiene are able to “step back” and analyze or reflect on their own knowledge. One such type of analysis is the justification beliefs using either theoretical or empirical based arguments. These students can also show an appreciation for scientific knowledge and the patterns it reveals in the world. They are also able to discuss institutional scientific relationship among physiology, health and hygiene. Finally, these students can describe the limitations of their own knowledge and scientific knowledge in general.

Standard 2.1

Analyze the working of different systems in the human body and their inter-relatedness for physiological well being.

3. Constructing New Scientific Knowledge

Students well versed in the study of the Physiology and Hygiene are users of the same knowledge. They possess the ability to ask questions about the working of the human body. They can develop solutions to problems that they encounter or question they ask by using scientific knowledge and techniques. In the process of finding solutions, students may use their own knowledge and reasoning abilities, seek out additional knowledge from other sources, and engage in empirical investigations of the real world.

Standard 3.1

Students will display a sense of curiosity and interest in the functioning of the human body and demonstrate an increasing awareness that this has lead to new developments in Physiology and Hygiene. They will create new interpretation of existing health and hygiene practices.

BENCHMARKS

Standard 1.1 Develop an understanding of personal and community health, population growth, environmental quality, natural and human induced hazards in local and national settings.

Benchmarks

1. Evaluate risks and define appropriate actions associated with natural hazards.
2. Investigate the effects of human activities on the well being of the individual and environment.
3. Evaluate contrasting decision regarding concepts and issues related to science and society.

Standard 2.1 Analyze the working of different systems in the human body and their inter-relatedness for physiological well being.

Benchmarks

1. Investigate the interdependence of various body systems to each other and to the body as a whole.
2. Examine various conditions that change normal body functions (e.g. allergies, injuries, diseases, and disorders.)
3. Understand the human body and the principles of personal and public health

Standard 3.1 Students will display a sense of curiosity and interest in the functioning of the human body and demonstrate an increasing awareness that this has lead to new developments in Physiology and Hygiene. They will create new interpretation of existing health and hygiene practices.

Benchmarks

1. Demonstrate skill in observing good health practices and carrying out public health measures.
2. Use a systematic approach to think critically about personal health risk and benefits.
3. Evaluate the importance of curiosity, and skepticism in Physiology and Hygiene.
4. Understand the role and function of the physiological sciences in our society.

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GRADES IX-X LEARNING OUTCOMES

Chapter 1 Physiology and Hygiene

Contents	Learning Outcomes
1.1 An Introduction to the human body (Anatomy and Physiology)	Students should be able to: <ul style="list-style-type: none">▪ Define anatomy and physiology▪ Describe the structural organization of the body▪ Define homeostasis and explain its general process▪ Relate the relationship of homeostasis to health and disease▪ Discuss the significance of Physiology
1.2. Introduction to Hygiene	<ul style="list-style-type: none">▪ Define Hygiene▪ Describe the principles of Hygiene
1.3 Relation of anatomy and Physiology to the study of Hygiene	<ul style="list-style-type: none">▪ Justify the Importance of Hygiene in our daily life▪ Describe the management and care of the body.▪ Discuss the advantages of maintaining a healthy body▪ Create awareness about disadvantages of neglecting body hygiene

Chapter 2 Health

Contents	Learning Outcomes
2.1. Concept of health	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Define health▪ Develop understanding of health▪ List the principles of health▪ Give the examples of healthy activities▪ Relate the principles of health to their daily activities▪ Classify the environmental factors affecting health▪ Analyze the contribution towards healthy conditions of environment
2.2. Principles of health	
2.3. Effects of environment on health	

Chapter 3 Personal Health

Contents	Learning Outcomes
3.1. Personal hygiene	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Describe the factors contributing to personal hygiene▪ Recognize the importance of cleanliness of body▪ Explain the care of :<ul style="list-style-type: none">• hands & nails• face• hair• feet▪ Discuss cleanliness of clothing▪ Demonstrate a positive attitude towards different situations▪ Compare and contrast significant positive attributes like tolerance, patience, consideration, helpfulness and loyalty
3.2. Clothing	
3.3. Mental and Social health	

Chapter 4 Circulatory System

Contents	Learning Outcomes
4.1. Cardiac cycle and circulation of the blood 4.2. Hygiene of heart	Students should be able to: <ul style="list-style-type: none">▪ Describe coronary circulation▪ Explain the flow of blood through the heart and systemic and pulmonary circulatory system▪ Describe the cardiac cycle and electrocardiogram▪ Discuss the care of heart▪ Give examples to show the benefits of regular exercise on the heart▪ Identify the effect of drugs on the heart▪ Describe how the body responds to Stress(social pressures, diet and habits)▪ Describe preventive measures for heart disease

Chapter 5 Digestive System

Contents	Learning Outcomes
5.1. Mechanism of digestion	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Identify the structures and functions of the digestive system▪ Identify the different types of digestive glands▪ Discuss the functions of salivary glands.▪ Explain the effect of mastication of food in the digestive processes▪ Discuss how enzymes are used to breakdown food.▪ Differentiate between the digestive process and the absorption process▪ Describe how the digestive and absorption processes convert food into energy.
5.2. Hygiene of oral cavity	<ul style="list-style-type: none">▪ Explain care of teeth and oral cavity▪ Describe proper cleaning of oral cavity▪ Identify infectious diseases spread through environment
5.3. Causes & prevention of infectious diseases	<ul style="list-style-type: none">▪ Explain the ways to prevent and control infectious diseases
5.4. Intestinal parasites	<ul style="list-style-type: none">▪ Define common intestinal parasites▪ Explain the impact of intestinal parasites on health
5.5. Food hygiene	<ul style="list-style-type: none">▪ Identify disorders of digestive system▪ Define food hygiene▪ Explain the importance of food hygiene▪ Discuss the importance of regulating food intake.▪ List ways to keep food safe

Chapter 6 Brain and Spinal Cord

Contents	Learning Outcomes
6.1. Nervous tissue	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Describe the structure of a typical neuron▪ Differentiate grey matter from white matter▪ Explain the phases of action potential▪ Describe the spinal cord and its protective coverings
6.2. The spinal cord and spinal nerves	<ul style="list-style-type: none">▪ Explain the functions of spinal cord▪ Identify sensory and motor tracts in the cord▪ Describe the outcome of common peripheral nerve disfunctions▪ Explain the environmental factors<ul style="list-style-type: none">• stress• posture• sleep
6.3. Influence of environmental factors on the nervous system	<ul style="list-style-type: none">▪ Describe some of the common problems of the nervous system▪ Recommend measures to minimize stress

Chapter 7 Locomotor System

Contents	Learning Outcomes
7.1.Skeletal system	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Identify the main function of the skeletal system▪ Describe the general structure of a bone and list the function of its parts▪ Locate and identify the bones that comprise the<ul style="list-style-type: none">• skull• vertebral column• thoracic cage• pectoral girdle• upper limb• pelvic girdle• lower limb▪ Identify various types of skeletal system disorders and understand their prevention
7.2.Muscular system	<ul style="list-style-type: none">▪ Identify and describe the locations of the major muscles including origin, insertion and tissues▪ Describe common types of body movements▪ Identify diseases and disorders of the muscular system▪ Explain the position and action of the muscles of the body
7.3.Health of musculoskeletal system	<ul style="list-style-type: none">▪ Identify the role of Calcium, Phosphorous and Vitamin D on bones▪ Outline the general rules for healthy exercises▪ Describe the effects of exercise and aging on bone (mass) tissue

Chapter 8 Excretory System

Contents	Learning Outcomes
8.1. Physiology of excretion	<p>Students should be able to:</p> <ul style="list-style-type: none">List and describe the functions of the urinary systemDescribe the role of kidney in excretionDescribe the role of skin in excretionDefine nephronDraw and label the structure of nephronDescribe the role of nephron in excretionExplain the composition of waterDiscuss the importance of clean waterExplain the causes of water contaminationDescribe measures to control water contamination.Discuss the affect of low intake of water on excretion
8.2. Morphology of nephron	
8.3. Importance of water	

Chapter 9 Endocrine System

Contents	Learning Outcomes
<p>9.1. Endocrine glands</p> <p>9.2. Functions of Endocrine glands</p>	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Define glands▪ Define hormones▪ Explain the nature of hormone▪ Name and describe the locations of the major endocrine glands of the body and hormones they secrete▪ Describe the mechanisms of hormonal actions▪ Describe how the human body integrates function within and among various maintenance systems.▪ Identify common disorders of the endocrine system

Chapter 10 Respiratory System

Contents	Learning Outcomes
<p>10.1. Anatomy of Respiratory Organs</p> <p>10.2. Air and Ventilation</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> ▪ Discuss the structure and functions of <ul style="list-style-type: none"> • nose • pharynx • larynx • trachea • bronchi and • lungs ▪ Describe pulmonary ventilation ▪ Describe how respiratory rates are controlled ▪ Explain the composition of air ▪ Describe how air is polluted and how it harms human health ▪ Discuss the impact of ventilation in the home

Chapter 11 Reproductive System

Contents	Learning Outcomes
11.1. Parts of the reproductive system	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Describe the gross anatomy of the structure of the male reproductive system and its functions▪ Describe the gross anatomy of the structure of the female reproductive system and its functions▪ Explain the importance of reproductive health▪ Discuss the factors affecting reproductive health▪ Discuss the need for cleanliness of undergarments
11.2. Reproductive health	

Chapter 12 The Sensory Organs

Contents	Learning Outcomes	
12.1. The eye	<p>Students should be able to:</p> <ul style="list-style-type: none">▪ Describe the anatomy of the eye and its accessory structures▪ Describe the physiology of vision▪ Explain how the eye can be protected from harmful effects.	
12.2. The ear		<ul style="list-style-type: none">▪ Describe the functions of ear▪ Discuss the defects of ear▪ Define earwax▪ Describe how can we protect our hearing ability
12.3. The nose		<ul style="list-style-type: none">▪ Enumerate tips to safe cleaning of the ear▪ Describe the function of nose
12.4. The skin		<ul style="list-style-type: none">▪ Enumerate tips to safe cleaning of nose▪ Explain the layers of skin▪ State hygienic practices for the care of skin

Chapter 13 Healthy Habits

Contents	Learning Outcomes
13.1. Habits and health 13.2. Your food and you	Students should be able to: <ul style="list-style-type: none">▪ Discuss bad habits that breakdown health.▪ Describe the effects of smoking.▪ Enumerate the benefits of exercise for better living▪ Explain the importance of weight control▪ Define Balanced diet▪ Discuss importance of balanced diet▪ Describe the importance of constituents of food▪ Discuss the importance of choice of food▪ Describe the importance of drinking water▪ Estimate the daily-recommended intake of water.

Chapter 14 – Protection & Promotion of Health

Contents	Learning Outcomes
14.1. Leisure & Recreation 14.2. Common Ailments	Students should be able to: <ul style="list-style-type: none">▪ Describe normal bodily functions▪ Discuss the importance of rest and sleep in daily life.▪ List the various types of leisure activities▪ Relate the role of recreation in the development of a healthy personality▪ Define common ailments▪ List the different ailments common in our society<ul style="list-style-type: none">• anemia• headache• common cold• diarrhea• allergic asthma• hepatitis (A,B,C)▪ Describe the causes of these common ailments▪ Recommend measures for prevention and control of these ailments

PRACTICAL WORK/ACTIVITY

Practical Description	Items Required	Equipment/Arrangement Required
<p>Chapter 1 Physiology and Hygiene No practical</p>		
<p>Chapter 2 Health</p> <p>1 Cleaning of school premises and surroundings</p>		Select the areas, cleaning stuff
<p>2 Visit to the hospital, hotels to check the environmental factors effecting health.</p>		Arrangements for the visit to any nearest hospital
<p>3 Reading and understanding of information of food labels. Locate the following particular information</p> <ul style="list-style-type: none"> ▪ allergy advice ▪ best before dates ▪ ingredients ▪ caloric content etc 	Collect different food labels	

Practical Description	Items Require	Equipment / Arrangement Required
Chapter 3 – Personal Health		
<p>1 Field trips: to observe and collect information regarding prevailing sanitary conditions</p>		<p>Arrangements for the visit to schools, colleges, markets, parks, hospitals</p>
<p>2 Students should listen to training sessions and read information about a particular topic in personal hygiene (e.g. washing hands)</p>	<p>Soap, water, towel etc</p>	<p>Arrange demonstration for the students</p>
<p>3 They should then use these notes for a purpose, for example to develop a leaflet or notice for the workplace, to write an article for a staff newsletter or to write an assignment.</p>	<p>Chart paper, markers</p>	<p>Encourage students to present their poster and leaflet. Arrange audio visual aids, presentations and slides</p>
Chapter 4 Circulatory System		
<p>1. Check the Radial pulse</p> <ul style="list-style-type: none"> • pulse rate • rhythm • volume 		<p>Demonstration by the teachers & participation of the students.</p>

Practical Description	Items Require	Equipment / Arrangement Required
2. Blood pressure Palpatory method with sphygmomanometer) Auscultator method(with Sphygmomanometer and stethoscope)	Sphygmomanometer and stethoscope	Demonstration by the teachers & participation of the students

Chapter 5 Digestive System		
1 Check the pH of saliva by pH paper	pH paper (Litmus paper)	
2 Draw a labeled diagram of digestive track	Chart paper, markers	
3 Regular dental checkup of the class every three to six months		Make arrangements for the dental checkups.

Chapter 6 Brain and Spinal Cord		
1. Study preserved brain in formalin.	4% formalin, Glass Container, Preserved brain	
2. Study of correct posture in various activities	Chart paper, markers	

Practical Description	Items Require	Equipment / Arrangement Required
Chapter 7 Locomotor System 1. Differentiate between different types of bone and muscle cells with the help of prepared slides, using microscope		Microscope Prepared slides

Chapter 8 Excretory System 1. Visit to laboratories and basic health units		Arrangements of field trips
1. Visit to city water reservoir		Arrangement for visit trip

Chapter 9 Endocrine system No Practical		
Chapter 10 Respiratory System		
1. Demonstration of the presence of tar in cigarette smoke and by charts showing, pictures of lungs of smokers and non-smokers.		Prepared transparencies of healthy and diseased lungs
2. Demonstration of air sacs in mammals using slides, photomicrographs, charts and models.		Transparencies Prepared slides

Practical Description	Items Require	Equipment / Arrangement Required
Chapter 11 Reproductive System No Practical		
Chapter 12 The Sensory Organs 1. Perform visual function test <ul style="list-style-type: none"> • Evaluation of VISUAL ACUITY using Snellen chart • Evaluation of colour vision using the ISHIHARA charts. 	Snellen chart ISHIHARA charts	
Chapter 13- Healthy Habits 1. Field trips; to observe and collect information regarding prevailing sanitary conditions		Arrange filed trips
2. Make a balanced diet chart	Charts, papers, markers	
3. Microscopic examination of polluted water.	Microscope, Petri dish	
4. Creating awareness of personal hygiene Learning to keep a check on body odors <ul style="list-style-type: none"> ▪ Manicure ▪ Pedicure Learning ways to maintain fresh breath		

CHAPTER WISE PERCENTAGE

Chapter	Weightage %
Chapter 1: Physiology and Hygiene	7%
Chapter 2: Health	4%
Chapter 3: Personal Health	5%
Chapter 4: Circulatory System	7%
Chapter 5: Digestive System	14%
Chapter 6: Brain and Spinal Cord	7%
Chapter 7: Locomotor System	10%
Chapter 8: Excretory System	5%
Chapter 9 :Endocrine System	5%
Chapter 10: Respiratory System	7%
Chapter 11: Reproductive System	6%
Chapter 12: The Sensory Organs	10%
Chapter 13: Health Habits	7%
Chapter 14: Protection and Promotion of Health	6%
Grand total	100%

TEACHING STRATEGIES

A school is a social organization, embedded in a society where it is placed. It is required that the social institution prepares individuals for an active & constructive role in society.

It thus becomes important that teaching and learning focus on developing values and acquiring knowledge, and skills, which are meaningful and applicable. It is imperative that teachers have a clear understanding of the teaching strategies.

Teachers need to ensure that whatever students learn prepares them not only to do well in examinations, but to successfully face the challenges of a global society, and develop their social consciousness to the extent that they become agents of social change. In order to achieve his objective teachers need to adopt innovative instructional strategies.

Avoiding the spoon-feeding style of traditional classroom teaching. The strategies should intellectually engage students of varying degrees of interests, abilities and styles of learning, strengthen their power of reasoning and stimulate their active participation through different activities and exercises.

The following instructional practices can be utilized:

- lecture
- co-operative/collaborative work groups
- discovery
- computer assisted learning
- self directed projects
- multimedia materials
- field trips
- guest speakers
- writing assignments such as creative writing, essays and written assessments
- group discussions
- creative presentations
- participation in laboratories

Teaching Learning Approaches and Classroom Activities

- The teaching learning approaches should be student-centered. Teachers should enter into partnership with the students in the whole learning process. Each child's self image as a learner should be well protected, especially when classroom discussions brings the socio-cultural values of the home and the community into high relief.
- Learning should be activity based wherever possible. Some SLOs explicitly require that students bring their own experience and informal researches to the classroom which they can share with others.
- Rote-learning of the concepts should not be encouraged. Teachers should try to develop questions requiring comprehension and higher order skills like application.
- The content has been elaborated in terms of specific learning objectives that will help to broaden student's conceptual understanding and learning of life skills directly relevant to meeting the challenges of 21st century. In particular, care has been taken to recognize the modern life.
- Finally, SLOs encourage both teachers and students to concentrate on understanding and application rather than recall and rote learning. The sequence of the topics has been developed to facilitate a deeper and more coherent understanding.

Assessment and Evaluation

The rationale of assessment is to find out whether students have acquired the kind of skills, knowledge, and understanding that we set as goals of the curriculum.

This purpose is traditionally achieved by conducting an examination at the end of the sessions called summative evaluation. Here teachers require students to express their understanding of what has been taught and the performance of students is measured using grade points. This form of assessment is convenient because it is easy to carry out in very little time. However, this form of assessment is a single snap shot and fails to provide opportunity to the student or the teacher to interact during the progression of the session. Thus the student has no opportunity to learn from mistakes. This gap can be filled by utilizing formative assessment, which is an ongoing process throughout the session where students' are not penalized for making mistakes

Assessment Procedures

- formative assessment should be used throughout the session and supplemented with the end of session summative evaluation .
- tasks that can help in formative assessment include
 - homework
 - lab reports
 - quizzes
 - tests
 - group discussions
 - oral presentations
 - worksheets
 - puzzles
 - online interactive activities
- feedback on students' work in all of the above tasks must be prompt, effective, and efficient.
- assessment should have questions setting that specifically help in finding out the following skills, knowledge and understanding according to Bloom's Taxonomy
 - **recall and retrieve** information related to the contents of the course.

Leading words for setting questions:

list, define, identify, label, tabulate, name, who, when, where, etc

- **comprehend** the information i.e. do they know what it means
Leading words for setting questions:
interpret, predict, distinguish, differentiate, estimate, discuss, etc
 - **apply** their knowledge i.e. do they know what is it good for.
Leading words for setting questions:
demonstrate, show, solve, classify, illustrate, modify, change, discover, etc
 - **analyze and synthesize** information i.e. taking things apart and putting things together. Leading words for setting questions:
Analyze: analyze, separate, explain, arrange, compare, infer, etc
Synthesize: combine, integrate, rearrange, create, formulate, design, etc
 - **Evaluate information** i.e. weighing available options. Leading words for setting questions:
decide, measure, recommend, select, conclude, compare, summarize, etc
- measure the potential and ability of students to engage in critical thinking
 - questions for the final paper should cover the entire range of the syllabus questions types should include MCQs, short answers, and essays.
 - assessment should focus on students strengths not just weaknesses
 - assessment language should be simple, clear and un-ambiguous

Evaluation Strategy:

An external examination is recommended at the end of the course. This evaluation should measure all the domains of learning and through it, the attainment of the objectives can be measured. The Weightage of the different domains of learning is given below:

Learning Domains for Measurement	Weightage In Evaluation
▪ Knowledge, Comprehension, Analysis, Evaluation, Synthesis, Application:	80%
▪ Skills of Communication, Initiating and Planning, Designing Experiments and Interpreting Data:	10%
▪ Manipulative skills (Performing Lab Work)	10%

Weighing of Assessment Objectives

Theory assessment: The theory examination is suggested to consist of a wide variety of questions. The assessment should be designed to examine the candidate's understanding of the whole syllabus and should test the following range of abilities.

Knowledge and Understanding 60%

Higher Abilities (handling information, application and problem solving etc.) 40%

Practical Assessment

This is designed to test experimental skills and investigations.

Suggestions for Structuring Assessment and Evaluation Tools:

More Emphasis should be on;

Less Emphasis should be on;

- | | |
|--|--|
| ▪ assessing what is most highly valued | ▪ assessing what is easily measured |
| ▪ assessing rich, well-structured knowledge | ▪ assessing discrete knowledge |
| ▪ assessing scientific understanding and reasoning | ▪ assessing scientific knowledge |
| ▪ assessing to learn what students do understand | ▪ assessing to learn what students do not know |
| ▪ assessing achievement and opportunity to learn | ▪ assessing only achievement |
-
- assessment pattern is subject to the requirement, policies, and procedures of the Examination Boards
 - question paper should be based on the curriculum not on a particular textbook
 - questions involving unfamiliar contexts or daily-life experiences may be set to assess candidates' problem-solving and higher-order processing skills. In answering such questions, sufficient information should be given for candidates to understand the situation or context. Candidates are expected to apply their knowledge and skills included in the syllabus to solve the problems

GENERAL INSTRUCTIONS TO AUTHORS

The National Curricula should be a reflection of our national needs and goal. This requirement can be met only if the textbooks are written in accordance with this curriculum. This curriculum meets not only the broad aims and objectives but also achieves the precise requirements of the individual subjects. Keeping these points in view the authors should observe the following points, while writing the textbooks.

- The authors should adhere to the learning outcomes of each concept or chapter as mentioned with the contents in the curricula.
- The permanence of the concepts with the previous classes, their integration and rational growth should be ensured.
- Horizontal and vertical overlap of the concepts should be kept away from. the main document
- The textbook should be informative and interactive with questions to be put at suitable interval to provoke the students to think.
- The details of the treatment of the concept should be properly classified into headings and subheadings.
- The language used should be simple, clear, straight forward, unambiguous and easily comprehensible by the students of the particular level.
- Simple questions may be asked within the chapter, which requires students to remember, think, and apply what they have just learnt as well as to strengthen the learning of the idea and principle.
- The new progression and expansion in the subjects should be integrated where appropriate.
- The examples and applications should be from every day life and be supportive of our cultural values.
- Photographs and illustrations should be clear, labeled and helpful of the text
- Tables, flow charts and graph may be given wherever needed.
- Key points at the end of each chapter should provide a summary of the important concepts and principles discussed in the chapter.
- Review questions should be given at the end of each chapter requiring students to recall, think and apply what they have learnt in this chapter.

- This should start from simple questions increasing the density gradually and should test knowledge, understanding and skills of the students. The last few questions should give confidence to the student to apply the concepts studied in this chapter.
- Each chapter should go with its accurate and logical summary to be given at the end of this chapter

ELECTRONIC INSTRUCTIONAL MATERIAL

Electronic instructional material is gaining popularity in the developed world. Educational technology providers are successfully marketing courseware with instructional management, assessment, individualized learning paths and professional development. Growing numbers of teachers have convenient and immediate access to entire libraries of instructional video correlated to curriculum. As far the educational scenario in Pakistan and other developing countries is concerned, lack of resources (particularly in schools) would hold back the evolution of electronic publishing in place of or along with printing.

It may be considered that a good ratio of the students of Secondary classes has access to computer technologies. They should be given chances of self learning (rather exploring the knowledge) and it can be made true by converting the data of the IX-X and XI-XII textbooks into electronic formats e.g. CD-ROMs. The CD-ROMs should be made available at the retail outlets. Where students don't have computers at schools/colleges or at homes, they may explore the CD-ROM at internet café.

CHAPTER ORGANIZING SYSTEM

Chapter Organizing system – It should be taken into account that a consistent numbering system leads the students through each chapter at a glance in the beginning to conceptual heading throughout and finally to the summary of key concepts at the end. Each chapter should be organized in the following pattern:

CHAPTER NAME

Outline:

Major Concepts:

- 1.1.....

- 1.2.....

- 1.3.....

Introduction

1.1 MAJOR CONCEPT

(Depth of the topic should be kept with the teaching periods advised in the curriculum)

Tit Bits:

STS
Connection

Subheading # 1.1.1

Subheading # 1.1.2

Critical
Thinking

Practical Activity:

EXERCISE:

The exercise should include;

- Multiple Choice Questions
- Short Questions
- Extensive Questions

(Questions should be made that can check learning outcomes in all the domains i.e. knowledge, comprehension, application, evaluation, synthesis and connection with technology and society.)

GLOSSARY

This glossary is intended to ensure that terms commonly used in the context of learning outcomes and assessment are appropriately interpreted so that no confusion what-so- ever arises in their use.

These words are listed below along with their contextual meaning.

We urge the users of these terms to strictly follow this glossary and associate meanings to the key words as given in this glossary.

- **Analyze**, to separate into parts or basic principles so as to determine the nature of the whole, examine methodically
- **Compare** requires candidates to provide both similarities and differences between things or concepts.
- **Create**, to produce through imaginative effort
- **Deduce/Predict** implies that candidates are not expected to produce the required answer by recall but by making a logical connection between other pieces of information. Such information may be wholly given in the question or may depend on answers extracted in an earlier part of the question.
- **Describe** requires candidates to state in words (using diagrams where appropriate) the main points of the topic. It is often used with reference either to particular phenomena or to particular experiments. In the former instance, the term usually implies that the answer should include reference to (visual) observations associated with the phenomena. The amount of description intended should be interpreted in the light of the indicated mark value.
- **Discuss** requires candidates to give a critical account of the points involved in the topic.
- **Define (the term(s)...) is intended literally. Only a formal statement or equivalent paraphrase, such as the defining equation with symbols identified, being required.**
- **Enumerate**, to count off or name one by one; list:
- **Estimate** implies a reasoned order of magnitude statement or calculation of the quantity concerned. Candidates should make such simplifying assumptions as may be necessary about points of principle and about the values of quantities not otherwise included in the question.

- **Explain** may imply reasoning or some reference to theory; depending on the context.
- **Justify**, to demonstrate or prove to be just right, or valid
- **List** requires a number of points with no elaboration. Where a given number of points are specified, this should not be exceeded.
- **Locate**, to determine or specify the position or limits of:
- **Outline**, A line marking the outer contours or boundaries of an object or a figure. **b.**
The shape of an object or a figure
- **Recognize**, to know to be something that has been perceived before
- **Recommend** to praise or commend (one) to another as being worthy or desirable
- **Relate**, to bring into or link in logical or natural association.
- **Show** is used where a candidate is expected to derive a given result. It is important that the terms being used by candidates be stated explicitly and that all stages in the derivation are stated clearly.
- **Sketch**, when applied to graph work, implies that the shape and/or position of the curve need only be qualitatively correct. However, candidates should be aware that, depending on the context, some quantitative aspects may be looked for, e.g. passing through the origin, having an intercept, asymptote or discontinuity at a particular value. On a sketch graph, it is essential that candidates clearly indicate what is being plotted on each axis.
- **Sketch**, when applied to diagrams, implies that a simple, freehand drawing is acceptable; nevertheless, care should be taken over proportions and the clear exposition of important details
- **State** implies a concise answer with little or no supporting argument, e.g. a numerical answer that can be obtained 'by inspection'.
- **Suggest** is used in two main contexts. It may either imply that there is no unique answer or that candidates are expected to apply their general knowledge to a 'novel' situation, one that formally may not be 'in the syllabi'.
- **What is meant by ...** normally implies that a definition should be given, together with some relevant comment on the significance or context of the term(s) concerned, especially where two or more terms are included in the question. The amount of supplementary comment intended should be interpreted in the light of the indicated mark value.

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