

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 3B1 : Fundamentals of Human Anatomy and Physiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Human Anatomy and Physiology	4	2	0	2	XII Pass	NIL

Learning Objectives

1. To learn about the structural organization of the human body.
2. To understand the normal functioning of the organ systems and their interactions.
3. To correlate physiological changes with major disorders and their pathogenesis.
4. To understand and interpret common medical diagnostic tests and reports.

Learning Outcomes

The students would be able to:

1. Understand the knowledge about the functional organization of the human body.
2. Develop insight of normal functioning of all the organ systems of the body and their interactions
3. Correlate physiology with various disorders and their pathogenesis.
4. Understand and interpret common medical diagnostic tests and reports.

SYLLABUS OF HH 3B1

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to General Human Anatomy and Physiology. 4 Hours

The unit presents the student with an overview of the general concepts of human anatomy and human physiology.

Subtopics:

General terms: Anatomy, Physiology, symmetrical arrangement, anatomical position, Median plane/ lateral plane, Internal/external, Superficial/ deep, Superior/ Inferior, Anterior/ posterior.

Introduction to various systems of the body:

- Animal Cell: structure, functions of each component (organelle) of the cell.
- Tissues: Structure and functions of various types of tissues.
- Various types, functions, structure of bone, cartilage & muscle
- Joints: Classification and movements of various joints.

UNIT II: Fundamentals of Human Anatomy

14 Hours

The unit presents the student with the understanding of the gross and microscopic structure of the major organs of the human body.

Subtopics:

- Heart and its structure
- Arteries, Veins and lymphatic system
- Structure of nose, larynx, trachea, bronchi and lungs
- Digestive system: Mouth, pharynx, oesophagus, stomach, liver, gall bladder, pancreas, spleen, intestines and glands associated with gastrointestinal tract.
- Urinary system structure of kidney, ureters, bladder, and urethra
- Endocrine system Structure and functions of Pituitary, Thyroid, Pancreas, Ovary and Testes
- Structure of uterus, fallopian tubes & mammary gland
- Overview of organization and functions of the Nervous System (cerebrum, cerebellum, spinal cord, sympathetic and parasympathetic system)

UNIT III: Fundamentals of Human Physiology

12 Hours

The unit presents the student with the understanding of the functioning of the major systems of the human body and its correlation with the pathogenesis of disease condition.

Subtopics:

- Cardiovascular System: circulations (systemic, pulmonary and portal), cardiac cycle, Cardiac Output (definition and factors affecting)
- Respiratory System: General overview of the respiratory functions Lung Volume and Capacities
- Digestive System: functions of: Stomach, Liver, Gallbladder, Pancreas and Intestines. Digestion and absorption of carbohydrates, fats and proteins Nervous and hormonal control of digestion (in brief)
- Excretory System: functions of Kidney and Nephron, non-excretory functions of kidneys Mechanism of urine formation,
- Endocrine System: Feedback mechanism/cascade functions of Pituitary, Thyroid, Pancreas, Ovary and Testes
- Reproductive System: Physiology of menstruation, lactation and menopause

PRACTICAL

(Credits 2; Hours 60)

1. Basic concept of blood groups, types, importance, and Rh incompatibility
2. Clinical significance of RBC, WBC and Platelet counting (Slides and videos)

3. Demonstration of haemoglobin estimation methods with help of videos, and its significance. Discussion about different types of anaemias and their aetiology
4. Pulse rate measurement by at least two methods – a) at rest b) after physical activity and c) of a child and an elderly person. Comparative analysis.
5. Recording of BP by using a Sphygmomanometer in Standing, sitting and recumbent position
6. Use of Pulse Oximeter and its significance.
7. Clinical significance of liver function tests and Jaundice
8. Ten histological slides- description, diagrams, and correlation with respective theoretical understanding
 - a. Muscle: smooth, skeletal and cardiac
 - b. Thyroid
 - c. Parathyroid
 - d. Kidney and nephron
 - e. Small intestine
 - f. Liver
 - g. Pancreas
 - h. Stomach
 - i. Testes
 - j. Ovaries
9. Clinical significance of variations in blood glucose and Diabetes mellitus. Use of Glucometer
10. Project Report on Birth control Methods

Essential readings

1. Chaudhari S K (2016) Concise Medical Physiology.7rd Edition. Central.
2. Ganong W.F. (2019)-Review of Medical Physiology.26th ed. McGraw Hill.
3. Guyton A.C. and Hall J.E. (2015) Textbook of Medical Physiology.13th ed. India:Harcourt Asia..
4. Tortora G.J and Grabowski S.R. (2020) Principles of Anatomy and Physiology.16th ed. John Wiley and Sons.Inc.

Suggested readings

1. Jain A. K (2019) Human Physiology for BDS (6th Edition), Publisher: Avichal Publishing Company; ISBN: 9788177394337.
2. Marieb E.N(2014) Human Anatomy and Physiology (10th ed)Pearson Education ,Inc, publishing as Benjamin Cummings.
3. West J.B. (1996): Physiological Basis of Medical Practice.12th Edition. B. I. Waverly Pvt. Ltd.
4. Vander's Human Physiology (2016) (WCB APPLIED BIOLOGY). 13th ed.
5. Human Physiology: From Cells to Systems (2012) (Mindtap Course List) 8th ed.
6. Comprehensive Textbook of Medical Physiology (Volume 2), 2017 by Gopal Krushna Pal, Pravati Pal, Nivedita Nanda.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.