

**CORE COURSE III – PHYSIOLOGY - THEORY**

**Objectives:**

1. To understand the Structure and Physiology of various organs in the body.
2. To obtain a better understanding of the Principles of Nutrition and Dietetics through the study of Physiology.

**UNIT – I**

Blood, Heart and Circulation

- a. Blood : Composition, functions, RBC – Structure, functions, erythropoiesis, Haemoglobin, WBC –Structure, functions, Classification.  
Blood Platelets: Structure, functions, Reticulo endothelia system, Blood groups – Rh factor. Blood coagulation, spleen –Structure and functions, Lymph – Lymphatic system.
- b. Heart and Circulation: Heart – Anatomy and physiology, Blood vessels – Structure of artery, vein, capillaries, Cardiac output, Arterial Blood pressure, clinical measurement of blood pressure, properties of cardiac muscle, origin and conduction of heart beat, cardiac cycle, Regulation of the Heart's action.

**UNIT – II**

**Respiratory and Excretory System**

- a. Respiratory System: Structure of respiratory organs, Mechanics of respiration, subdivisions of lung air, Chemistry of respiration. Artificial respiration, control of respiration.
- b. Excretory System : Physiology of kidney – nephron, formation of urine, voiding of urine. Skin – Structure and functions, Regulations of body temperature.

**UNIT – III**

**Digestive System** : General anatomy of digestive system – Digestive in the mouth, stomach and intestines. Movements of small intestine. Role of pancreas, Liver – Structure and function.

**UNIT – IV**

**Endocrine and Reproductive system:**

- a. Endocrinology : Structure and functions of thyroid, pituitary, parathyroid, adrenals, islets of Langerhans of pancreas, sex glands.
- b. Reproductive System : General anatomy – Female and male reproductive system. Testis – Spermatogenesis, male sex hormones, ovaries – oogenesis, Female sex hormones, Menstrual cycle. Phases and endocrine control. Mammary glands – Structure, lactation and process of reproduction, fertilization, development of embryo, pregnancy and parturition..

## **UNIT – V**

### Nervous System and Special Senses

#### **a. Nervous System:**

- 1 Spinal cord – Structure and functions. Ascending and descending tracts, reflex action.
- 2 .Brain – Structure and functions of cerebrum, optic thalamus, midbrain, pons medulla oblongata, Hypo thalamus, cerebellum.
3. Autonomic nervous system, sympathetic and parasympathetic.

#### **b. Special Senses.**

- 1 Physiology of vision, Structure of eye, dark and light adaptation, accommodation of the eye, visual fields, common \*\*\*\*\* due to abnormalities – presbyopia, cataract, Astigmatism, Blindness.
- 2 Ear – Structure and Physiology of hearing.

#### **Practicals**

1. Histology of the epithelial, muscular, connective tissue.
2. Microscopic structure of bone and cartilage.
3. Microscopic structure of nerve.
4. Estimation of haemoglobin, RBC and WBC count Demonstration.
5. Identification of different types of white blood cells – Demonstration.
6. Determination of blood groups.
7. Recording of normal heart beat of frog.
8. Effect of temperature on heart beat – demonstration.
9. Arterial blood pressure and pulse rate, effect of exercise.
10. Histology of artery, vein, trachea and lung.

#### **Related Experiences**

1. Visit to blood bank.
2. Observation on giving transfusion.

#### **Record**

Record of the practicals will be maintained by the students and submitted at the end of the Semester for internal assessment.

#### **Text**

1. Best C.H. and Taylor N.B. : The Living Body.
2. Chatterjee : A Text Book of Physiology.

#### **Reference**

1. Wright. S. : Applied Physiology
2. Saradha Subramanian & Madhavan Kutty : Human Physiology.