APPLIED PHYSIOLOGY

Sem	Subject Code	Category	Lecture		Theory		Credits
I	21CPFN1C	Core paper III	Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week	3
			90	6	90	6	

COURSE OBJECTIVE:

The students will be able to

1. Learn the physiological conditions related to Nutrition.
2. Understand the recent advances in Applied Physiology.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Understanding the Concept of Physiological functions of the body	k2
CO2	Understanding the Hypo/Hyper secretions and its effects in the body	k2
CO3	Understanding the importance of different systems of the body and its deficiencies	K3
CO4	Understanding the biochemical basics of different body parts	K3
CO5	Understanding the interrelationship between different parts of the body	K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	M
CO2	M	M	M	M	S
CO3	S	S	M	M	M
CO4	M	M	S	M	M
CO5	M	S	S	S	S

S-Strong; M-Medium, L- Low

UNIT-I **18 Hours**

PHYSIOLOGY OF CELLS AND NERVOUS SYSTEM

a) Cells and Tissues - Cells, Tissues - Classification of Tissues. Water, Body fluid compartment, membrane potential, Inter cellular communication- Homeostasis. Electrolytes, Acid-Base Balance in the body.

b) Nervous System- Spinal cord : Structure and functions. Ascending and descending tracts, reflex action. Brain – Structure and functions of cerebrum, optic thalamus, mid brain, pons, medulla oblongata, hypothalamus, cerebellum. Autonomic Nervous System: Sympathetic and parasympathetic. Mechanism of energetics of muscle contraction, muscle fatigue. Special Sense Organs – Basic Physiology and Functions.

UNIT-II **18 Hours**

ENDOCRINOLOGY AND REPRODUCTION

a) Endocrine System - Anatomy of endocrine glands. Hormones- Mode of action, functions of hormones of the endocrine glands-Pituitary, Adrenal, Thyroid, Gonadal hormones, Pancreas, Pineal body and Parathyroid, Hypo and Hyper functions of the glands.

b) Reproductive system – Male Reproductive system - Development of Gonads and Genitalia, Testis and Spermatogenesis, Female Reproductive System – Oogenesis, Physiological Changes and hormones during menstruation, Pregnancy, Parturition and lactation.

UNIT- III **18 Hours**

RESPIRATION AND GASTRO- INTESTINAL

a) Respiratory System - Structure of respiratory organs, mechanics of respiration, structure of lung, chemistry of respiration, artificial respiration, control of respiration. Oxygen requirement for nutrients, composition of inspired and expired gas, partial Pressure of gas, diffusion gradient and CO_2, Hemoglobin affinity for O_2 and dissociation.

b) Digestive System - General anatomy of digestive system. Digestion in the mouth, stomach and intestines.Movement of intestine. Mechanism of secretion of gastric juice.Movements of small intestine, role of Pancreas. Liver – structure and function. Hunger, Appetite, Satiety-physiological and psychological factors affecting food intake, circadian rhythm in GI tract secretions.

UNIT- IV **18 Hours**

CIRCULATION

a) Blood and Blood Platelets - Composition, functions, RBC – Structure, functions, erythropoiesis, haemoglobin. WBC – Structure, functions, classification.Structure, functions, reticule endothelial 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 heart action. Determination of blood groups.Identification of different types of white blood cells. Arterial blood pressure and pulse rate. ECG- interpretation, Latest development in cardiac condition, cardio vascular mechanism and homeostasis.

UNIT- V

IMMUNITY AND EXCRETION **18 Hours**

a) Immune System - Definition and Properties of immunity, lymphocytes in immunity, antigens–types, properties, antigen- antibody interaction, development of cellular immunity, development of humoral immunity, antibodies, immune deficiency diseases, autoimmune diseases, allergy and immunology, hyper sensitivity reactions.

b) Excretory System -Physiology of kidney-nephron, formation of urine, voiding of urine. Skin – structure and function, regulation of body temperature.

Reference Books

1. Astrand, P.O. and Rodahi, K., 1981. Textbook of work Physiology, McGraw Hill Book Company, New York.

2. Best, H. and Taylor, B., 1992. The Physiological basis for Medical Practice, 8th edition.The Williams and Wilkins Company.

3. Chatterjee, C.C., Juman, 1987. Human Physiology, Vol. I and II, Medical Allied Agency, Calcutta.

4. Guyton, A.C., 1991. Textbook of Medical Physiology, 14th edition, W.B. Saunders Company, Philadelphia.

5. Samson and Wright, 1989. Applied Physiology, Tandon Publication.

Journals

1. The Journal of Laboratory and Clinical Medicine, C.V. Mosby Company.

2. The Indian Journal of Clinical Nutrition, American Society for Clinical Nutrition, Inc., U.S.A.

TEACHING METHODOLOGY

- Chalk and board teaching
- Assignments
- Group discussions
- PPT
- Seminars
- Other Group activity

SYLLABUS DESIGNER:

- Mrs. K. GOWTHAMI, Head and Assistant Professor, Department of Foods and Nutrition
- Mrs. R. TAMILSELVI, Assistant Professor, Department of Foods and Nutrition