

## HUMAN PHYSIOLOGY AND NUTRITIONAL BIOCHEMISTRY

Sem	Sub. Code	Category	Lecture		Theory		Practical		Credits
			Hrs/ week	Hrs/ sem.	Hrs/ week	Hrs/ sem.	Hrs/ week	Hrs/ sem.	
I	21CPBC1B	Core	4	60	4	60	-	-	4

### COURSE OBJECTIVE:

To retain the straight forward approach to the description of the body systems and how they work, and the normal anatomy and physiology of each organ system human body.

### COURSE OUTCOMES:

CO Number	CO Statement	Knowledge Level (K <sub>1</sub> – K <sub>4</sub> )
CO1	To have the basic knowledge of the structure and functions of heart transport of oxygen and nutrients, composition and function of Blood cells. To know structural organization of respiratory system and its function.	K1
CO2	To understand the structure, function and chemical digestion of digestive system. To describe the structure and function of the organs in the urinary system.	K2
CO3	An overview of types and essential function of muscle and its abilities in during response. To learn the sum total of the chemical and electrical activity in the brain and nervous system. To study the structure and function of Reproductive system.	K2
CO4	To study the importance of energy metabolism in Biochemical process of combining nutrients to release energy.	K3
CO5	To know the role of vitamins and minerals and their requirements in the functioning of the human body. Drug metabolism focused on the evaluation of toxicity, efficacy and invitro and invivo biological activities of drugs	K4

(\*CO – Course Outcomes

Knowledge Level: K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze).

### MAPPING WITH PROGRAMME OUTCOMES:

COS	PO1	PO2	PO3	PO5	PO6
CO1	M	S	M	M	S
CO2	S	M	M	S	M
CO3	S	S	S	S	S
CO4	M	S	S	M	M
CO5	S	M	M	S	S

(S- Strong; M-Medium; L- Low)

**Total Hours: 60**

## **UNIT I**

### **Circulatory & Respiratory system**

**10 Hours**

Composition and functions of blood, Blood Clotting mechanism. Structure and function of heart and Cardiac cycle. Structure and functions of lungs and mechanism of respiration.

## **UNIT II**

### **Digestive and Excretory system**

**15 Hours**

Structure and functions of digestive system- stomach, liver, pancreas, gall bladder and Intestine. Digestion, absorption and excretion. Structure and functions of excretory system and role of kidney in acid- base balance.

## **UNIT III**

### **Muscular, Nervous and Reproductive system**

**15 Hours**

Type of muscles and mechanism of muscle contraction. Structure and functions of CNS- Brain, spinal cord and nerves, neurons. Transmission of nerve impulses & Neurotransmitters. Structure and function of reproductive system. Physiology of pregnancy, parturition & lactation.

## **UNIT IV**

### **Energy Metabolism**

**10 Hours**

Energy concepts of food, Unit and measurement of energy expenditure by bomb calorimeter, calorific value of proteins, carbohydrates and fat, RQ of foods. Basal metabolic rate (BMR), its measurement and influencing factors, SDA of foods. Nutritive value of foods, biological value of proteins. Protein malnutrition (kwashiorkor) and under nutrition (marasmus)- its preventive and curative measures.

## UNIT V

### Vitamins, Minerals and Drug interaction.

**10 Hours**

Food source of vitamins and minerals (Ca, P, Cu, K, Fe, I) their deficiency and toxicity.  
Drug- nutrient interaction and hormone- nutrient interaction.

**DISTRIBUTION OF MARKS:** Theory - 100% and Problems – Nil

### TEACHING METHODOLOGY:

- Black Board
- Power Point Presentations
- Assignments
- Models
- Demonstrations

### TEXT BOOKS:

S.NO	AUTHOR	TITLE	PUBLISHER	YEAR OF PUBLICATION
1.	Ross and Willson	Human Physiology	Elsevier	11 <sup>th</sup> edition (2010)
2	K.Sembulingam	Essentials of Medical Human Physiology	Juta,Limited	4 <sup>th</sup> edition(2008)

**REFERENCE BOOKS:**

S.NO	AUTHOR	TITLE	PUBLISHER	YEAR OF PUBLICATION
1.	William. F. Ganong	Review of Medical physiology	McGraw- Hill Medical	22 edition (2005)
2.	Guyton and Hall	Human Physiology and Mechanisms of Disease	Saunders Publications	6 <sup>th</sup> edition (1996)
3.	C.C Chatterjee	Human Physiology	Medical Allied Agency	11 <sup>th</sup> edition (1985)
4.	Davidson and Passmore	Human Nutrition and Dietics	Churchcill Livingstone	8 <sup>th</sup> edition (1986)

**WEB SOURCES:**

- [http://www.biology.arizona.edu/cell\\_bio/cell\\_bio.html](http://www.biology.arizona.edu/cell_bio/cell_bio.html)
- [https://ecok.libguides.com/biology/web\\_sources](https://ecok.libguides.com/biology/web_sources)
- <https://www.nicholls.edu/biol-ds/biol155/Lectures/Cell%20Biology.pdf>
- <http://www.bio-nica.info/Biblioteca/Bolsover2004CellBiology.pdf>

**SYLLABUS DESIGNER:**

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