FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
Department of Biochemistry
Course Curriculum

PART- A: Introduction				
Program: Bachelor in Science *(Honors/Honors with Research)*			**Semester - VII**	Session: **2024-2025**
1	**Course Code**	**BCSE-05 T**		
2	**Course Title**	**Human Physiology**		
3	**Course Type**	**Discipline Specific Elective (Theory)**		
4	**Pre-requisite (if, any)**	As per the Program		
5	**Course Learning. Outcomes (CLO)**	*On successful completion of the course, the student shall be able to:* ➢Understand mechanism of signal transduction by steroid and polypeptide hormones and the role of second messengers in signal transduction. ➢Explain the process of gaseous exchange in tissues and lungs, respiratory adaption to high altitude and the difference between hemoglobin and myoglobin. ➢Explain muscular dystrophies, the role of steroids in muscle building and the use of hormones in cattle and poultry industry. ➢ Explain role of kidney in erythropoiesis.		
6	**Credit Value**	**3 Credits**	***Credit = 15 Hours - learning & Observation***	
7	**Total Marks**	**Max. Marks: 100**	**Min Passing Marks: 40**	

PART -B: Content of the Course

Total No. of Teaching–learning Periods (01 Hr. per period) - 45 Periods (45 Hours)

Unit	Topics (Course contents)	No. of Period
I	**Neurotransmission:** Types of neurons, generalized structure of multi polar neuron. Resting membrane potential, Action potential, Transmission of nerve impulse along anaxon and across synapse. Neurotransmitters and inhibitors of neurotransmission. **Muscle:** Types of muscles and structure. Ultra structure of skeletal muscle. Contractile and regulatory proteins of muscle. Sliding filament model of skeletal muscle contraction. **Bone:** Composition and structure of long bone, growth and remodeling of long bone. Factors affecting its growth.	12
II	**Excretory system**: Structure of the nephron, formation of urine – Glomerular filtration, tubular re-absorption and secretions. **Body fluids:** Blood volume, composition and functions, RBC, WBC and platelets, the structure and functions. Mechanism of blood coagulation. Biochemical events in transport of CO2 and O2 in blood. Cerebrospinal fluid, lymph and its function. Blood brain barrier.	11
III	**Heart and lungs**–Structure and function of cardiac tissue and lungs Acid-base balance: Maintenance of normal pH of the body fluids. Blood buffers. Role of lungs And kidney in acid base balance. **GIT and Liver:** Structure and function of gastrointestinal tract, Structure of a lobule, functions–metabolic, storage and detoxification.	11
IV	**Endocrine system:** Endocrine organs, classification of hormones. Dynamic balance and regulation of hormone secretions. Functions of the hormones of hypothalamus, pituitary, adrenal, thyroid, pancreas and gonads. General mechanism of hormone action. Concept of messengers eg: cAMP, DAG, IP3.	11
Keywords	Heart, Liver, Kidney, Bone, Brain, Neurons	

Name and Signature of Convener & Members of CBoS:

PART–C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Concise Medical Physiology– Choudhary – New Central Book Agency–Calcutta.
- Text Book of Medical Physiology–Guyton–Prism Books Pvt. Ltd.–Bangalore.
- Harper's Biochemistry–Murray, Granner, Mayes, and Rod well – Prentice Hall International Inc.
- Text book of medical physiology: A. C. Gyton , and J.E Hall Saunders Elsevier.
- Human Physiology, Vol. I & II,-C. C. Chatterjee – Medical Allied Agency–Calcutta.

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): **(By Course Teacher)**	Internal Test / Quiz-(2): **20 +20** Assignment / Seminar - **10** Total Marks - **30**	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam (ESE):	**Two section – A & B** Section A: **Q1.** Objective – **10 x1= 10** Mark; **Q2.** Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

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PART- A: Introduction				
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1	**Course Code**	**BCSE-05 P**		
2	**Course Title**	**Human Physiology**		
3	**Course Type**	**Discipline Specific Elective (Practical)**		
4	**Pre-requisite** (if, any)	***As per Program***		
5	**Course Learning. Outcomes (CLO)**	*On successful completion of the course, the student shall be able to:* ➢ Understand Qualitative and quantitative analysis of biological molecules and their estimation using multiple methods ➢ Demonstrate the process of gaseous exchange in tissues and lungs, respiratory adaption to high altitude and the difference between hemoglobin and myoglobin. ➢ Explain muscular dystrophies, the role of steroids in muscle building.		
6	**Credit Value**	**1 Credits**	***Credit =30 Hours Laboratory or Field learning/Training***	
7	**Total Marks**	**Max. Marks: 50**		**Min Passing Marks: 20**

PART -B: Content of the Course		
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)		
Module	**Topics (Course contents)**	**No. of Period**
Lab./Field Training/ Experiment Contents of Course	➢ Preparation of blood smear and differential leukocyte count. ➢ RBC and WBC counting, Calculation of blood Indices. ➢ Estimation of hemoglobin ➢ Colorimetric estimation of Protein by Lowry's method. ➢ Estimation of Uric acid. ➢ Urea by DAMO method. ➢ Creatinine by Jaffe's method. ➢ Phosphorous by Fiske and Subbarow's method. ➢ Iron by Wong's method. ➢ Qualitative analysis of urine-detection of urea, uric acid and creatinine.	**30**
Keywords	RBC, WBC, Serum Protein, Estimation, plasma minerals.	

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PART–C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Text Book of Medical Physiology–Guyton–Prism Books Pvt.Ltd.–Bangalore.
- Harper's Biochemistry–Murray, Granner,Mayes,andRodwell– Prentice Hall International Inc.
- Text book of medical physiology:A.C.Gyton,andJ.E Hall Saunders Elsevier.

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): **10 & 10** Assignment/Seminar +Attendance - **05** Total Marks - **15**	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **15** Marks
End Semester Exam (ESE):	**Laboratory / Field Skill Performance: On spot Assessment** **A. Performed the Task based on lab. work - 20 Marks** **B. Spotting based on tools & technology (written) – 10 Marks** **C. Viva-voce (based on principle/technology) - 05 Marks**	**Managed by Course teacher as per lab. status**

Name and Signature of Convener & Members of CBoS: