PAPER-VII-COMPARATIVE ANIMAL PHYSIOLOGY

Semester	Subject Code	Category	Lecture		Theory		Practical	Credits
			Hrs/ week	Total Hours/ Semester	Hrs/ week	Total Hours/ Semester		
III	21CPZO3A	Core-VII	5	75	5	75	Nil	5

COURSE OBJECTIVES

To drive an unified knowledge of the behavioral physiology, respiratory ,circulation, excretion ,neuro muscular and endocrine regulation

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Understand and analyze the adaptations, concepts of homeostasis and bioluminescence in invertebrates and vertebrates.	K2
CO2	Remember, understand, analyze, and evaluate the physiology of circulation, and respiration	K1,K2&K4
CO3	Understand and analyze the Osmatic regulation and Excretion in invertebrates and vertebrates.	K2&K4
CO4	Understand and analyze the physiology of effectors, receptors and neuronal conduction.	K2&K4
CO5	To Understand and acquire knowledge on the physiology of endocrine glands in insects and man.	K2&K4

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

MAPPING WITH PROGRAMME OUTCOMES

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

S- Strong; M – Medium ; L- Low

DISTRIBUTION OF MARKS: THEORY 100%

UNIT-I DIGESTION, METABOLISM AND STRESS **15 Hours**

Digestion and Role of gastrointestinal hormones in digestion. Metabolism-Carbohydrates, Proteins, Fats and Minerals. Stress Physiology - Basic concept of environmental stress and strain; concept of elastic and plastic strain; stress resistance, stress avoidance and stress tolerance. Physiological response to oxygen deficient stress - Physiological response to body exercise - Meditation, Yoga and their effects.

UNIT- II RESPIRATION AND CIRCULATION **15 Hours**

Respiration in Invertebrates and Vertebrates-Comparative physiology of Respiration in relation to different habitats– Structures – Respiratory gases – uptake– transport of respiratory gases- O_2 &CO_2 dissociation curves – respiratory pigments -BMR

Circulation - structure of heart -a comparative study- types of hearts - physiology of cardiac muscle –Mechanism of heart beat and its regulation - blood coagulation and theories.

UNIT III OSMO IONIC REGULATION AND EXCRETION **15 Hours**

Osmoregulation in Freshwater and Marine aquatic organisms and Osmoregulation in terrestrial animals. Excretory physiology –Comparative study of excretory products in relation to different habitats, kidney-urine formation, concentration, elimination, micturition, Role of Hormones in regulation of water balance.

UNIT-IV NEURO-MUSCULAR PHYSIOLOGY **15 Hours**

Gross anatomy of brain and spinal cord, Neurons – action potential – transmission of nerve impulse (Chemical and Electrical) – neurotransmitters – mechanism of neural transmission – neuro-degenerative diseases. Muscular physiology-Muscle contraction – theories – molecular mechanism of muscle contraction.

Receptor Mechanism: Chemoreceptor, Phonoreceptor and Photo receptor and tango receptor.

UNIT- V ENDOCRINE REGULATION AND BEHAVIOURAL PHYSIOLOGY

15 Hours

Endocrine glands – Feedback regulation – Hypothalamus-Pituitary – gonadal axis – Role of reproductive hormones – gamete formation; fertilization; embryonic development; parturition; lactation; neuroendocrine regulation -Pheromones in insects. Hibernation, Aestivation and Diapause.

TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Eckert, R	Animal Physiology: Mechanisms and Adaptations	W.H. Freeman and Company, New York	2007
2.	Hochachka, P.W. and Somero, G. N	Biochemical Adaptation	Princeton, New York	2015
3.	Hoar, W.S.	General and Comparative Animal Physiology	Prentice Hall of India	1991
4.	Schiemdt Nielsen	Animal Physiology: Adaptation and Environment	**Cambridge** University Press	1997
5.	Strand, F.L	Physiology: A regulation System Approach	Macmillan Publishing Co., New York	1997
6.	Brown	Comparative nimal physiology III ED edition	W.B.Saundars Company,Phiadelphia	1985
7.	Prosser, C.L	Environmental and Metabolic Animal Physiology	Wiley-Liss Inc, New York	1991
8.	Rastogi	Essencials of animal physiology IV Edn	New age international(p)Ltd	2005

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	S.K.Nelson	Animal physiology, Adaptation and Environment	Cambridge University Press	1985
2.	Hill – Wyse-Anderson	Textbook of animal physiology second edition	Sinauer associates publications	2008
3.	Knut Schmidt – Nielsen, Liana Bous, C.Richard Taylor	Comparative physiology primitive animals	Cambridge university press	2009
4.	August Krogh	Osmatic regulation in aquatic animals	Cambridge university press	2009
5.	P.K. Biswas	Handbook of animal physiology	Agrotech press	2012

WEB SOURCES:

www.sciencedirect.com

www.pubmed.com

www.livescience.com

www.biology.lu.se

TEACHING METHODOLOGY

- Class room teaching
- Assignments,Seminars and Models
- Group Discussions
- Home test
- PPT Presentations
- Board and chalk
- Demonstration from the Video slides, Animated videos and interactive software.

SYLLABUS DESIGNERS

- Dr D.Sasikala, Assistant Professor & HOD
- Dr.V.Kiruthiga, Assistant Professor
- Dr V.Rekha, Assistant Professor
- DrA.Vinodhini, Assistant Professor
- Dr.G.Vidhya, Assistant Professor
- Dr. S. Vijayakumari, Assistant Professor