

FOUR YEAR UNDERGRADUATE PROGRAM(2024 – 28)
DEPARTMENT OF ZOOLOGY
COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Life Science <i>(Honors/ Honors with Research)</i>		Semester - VII	Session: 2024-25
1	Course Code	ZOSE- 05T	
2	CourseTitle	Endocrinology	
3	CourseType	Discipline Specific Course	
4	Pre-requisite(if,any)	<i>As per Program</i>	
5	Course Learning Outcomes(CLO)	<p>After successfully completing this course, the students will be able to:</p> <ul style="list-style-type: none"> ➤ Understand characters of hormones, their biochemical origin, functions and their role in physiology. ➤ Learn about the organization of endocrine glands and mechanism of hormone action. ➤ The learners will understand the hormonal disorders, and diseases. ➤ Comprehend about the role of hormone in healthy lifestyle. ➤ Develop insights on advancements in endocrinology. 	
6	CreditValue	3 Credits	Credit = 15 Hours - learning & Observation
7	TotalMarks	Max.Marks: 100	Min Passing Marks:40
PART -B: Content oftheCourse			
Total No. of Teaching-learning Periods(01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	<p>Chemical Regulators and Gene action: General characters, chemical structure & properties of Hormones. Comparison between hormone and enzymes. Types of chemical regulators: Hormone, Neurotransmitters, Parahormones, Semiochemicals: Pheromones, Lumones & Chalones. Hormone Receptors: Mechanism of hormone action and cell signaling, Second messengers: types and features. Gene & Hormone Action, Hormone Responsive Element. Feedback system in Hormone action, hormone delivery. The Lesser Known Regulatory Substances (Somatomedins, Prostaglandin, Eicosanoids, Thromboxane etc.) Analytical techniques of Hormone Assay: Radioimmuno assay, Enzyme linked immune sorbent assay, Immune histochemistry. Hormone Replacement Therapy.</p>		10
II	<p>Neuro-endocrine system: Hypothalamus: Origin, Location, Gross Anatomy, and Structure. The Endocrine Hypothalamus: Hypothalamic Hormones, Hypothalamic Nuclei, General Functions of Hypothalamus, Hypothalamo-hypophysial portal system, Hypothalamo-hypophysial-gonadal axis. Pituitary Gland: Origin, Location, Structure, Hormones, Control of secretion & disorders. Regulation of pigmentation by Pars Intermedia in vertebrate chromatophores. Pineal Gland: Origin, Location, Structure, Hormones & Control of secretion, Overview of Biological Rhythm. Role of Oxytocin, Endorphin, Serotonin and Dopamine in temperament stability (Happiness Hormones & Mental Health). Neuro-endocrine system in Insects and its physiology.</p>		11
III	<p>Endocrine System & Physiology I: Thyroid Gland: Organization of Mammalian Thyroid Gland, Biosynthesis of Thyroid Hormones, Metabolism of Thyroid Hormones, Regulation of Thyroid hormone secretion, Physiological & Metabolic Roles of Thyroxine, disorders of Thyroid Functions. Parathyroid Gland and Calcium Regulation. Calcium and Phosphate homeostasis. Adrenal Gland: Organization of Mammalian Adrenal Gland. The Adrenal Steroid Hormones (Synthesis Pathway & Physiological Roles), The Renin Angiotensin System, The Adrenal Medulla & Catecholamines (Synthesis Pathway and Mechanism of action of Catecholamines). Disorders of Adrenal Gland.</p>		12
IV	<p>Endocrine System & Physiology II: The Endocrine Pancreas: Origin, Islet Cell Structure & cell types, Hormones of the endocrine pancreas, Insulin: Biochemistry, Synthesis, Mechanism of action and physiological role, Glucose Transporters in Mammals & Diabetes mellitus. Insulin Resistance. Hormones of Gonads: Gonadal steroid hormones, Biosynthesis, transport, metabolism and physiological effects. Role of hormones in ovarian cycle & Menopause. Hormones in Birth Control: Role of hormones in sex determination. Hormones of Gastrointestinal Tract: Action of Gastrointestinal Peptides in mammals. Hormonal control of feeding behaviour. Hormones and lifestyle disorders: Chronic stress, Blood Pressure & Obesity.</p>		12
Keywords	<p><i>Hormone, Pheromones, Biosynthesis, Thyroid Gland, Adrenal Gland, Pancreas, Catecholamines, Sex Determination, Diabetes, Obesity.</i></p>		
SignatureofConvener&Members (CBoS) :			

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Chandra S. Negi: Introduction to Endocrinology, 2009, PHI
- Shastri V.K., Endocrinology and Reproductive Biology, Rastogi Publicatio

Reference Books Recommended –

- Hadley: Endocrinology (6th ed. 2009, Prentice Hall)
- Lodish et al :Molecular Cell Biology, W.H.Freeman& Co Ltd.
- Turner &Bagnara: General Endocrinology, 6th ed.1984, Saunders)
- Norris: Vertebrate Endocrinology, Fourth Edition, 2007, Academic Press

Online Resources–

- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=2rAs1Puvga4LW93zMe83aA==>
- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=2rAs1Puvga4LW93zMe83aA==>

Online Resources–

- <http://ndl.iitkgp.ac.in/he document/cec/ gFN1zyU718 PLNspmbLKJ8KYPKieHeF3oC4jZYt8zBe4>
- <https://egyankosh.ac.in/bitstream/123456789/33320/1/Unit-4.pdf>
- <https://www.ncbi.nlm.nih.gov/books/NBK441576/>

PART -D:Assessment andEvaluation

Suggested Continuous Evaluation Methods:

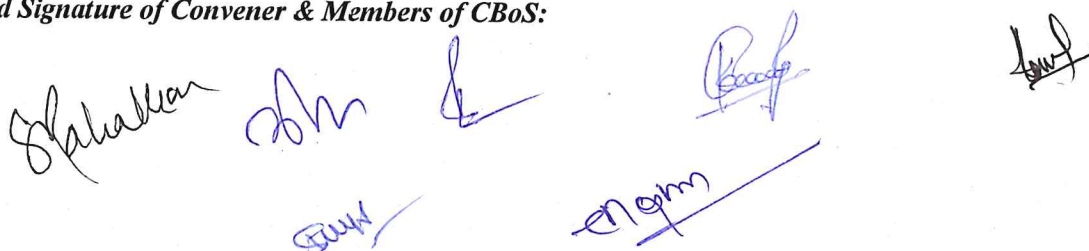
Maximum Marks: 100 Marks

Continuous Internal Assessment(CIA): 30 Marks

EndSemester Exam(ESE): 70 Marks

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

Name and Signature of Convener & Members of CBoS:



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Program: Bachelor in Life Science <i>(Honors / Honors with Research)</i>		Semester - VII	Session: 2024-25
1	CourseCode	ZOSE-05P	
2	CourseTitle	Endocrinology	
3	CourseType	Discipline Specific Elective Lab Course	
4	Pre-requisite(if,any)	<i>As per Program</i>	
5	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> ➤ Develop understanding of histological study of endocrine glands ➤ Learn the role anatomical aspects of various endocrine glands. ➤ Attain the fundamentals of applied endocrinology. ➤ Explore the operation of basic medical kits of routine usage. ➤ Create awareness towards lifestyle disorders related to hormones. 	
6	CreditValue	1 Credits	<i>Credit =30 Hours Laboratory or Field learning/Training</i>
7	TotalMarks	Max.Marks:50	Min Passing Marks:20
PART -B: Content oftheCourse			
TotalNo.of learning-Training/performancePeriods:30 Periods (30 Hours)			
Module	Topics (Course contents)		No.ofPe riod
Lab./Field Training/ Experiment Contents of Course	<ul style="list-style-type: none"> • Study of histological slides of the endocrine glands. • Demonstration of Endocrine Glands of Cockroach. (Alternative Methods) • Demonstration of Endocrine Glands in Rat (Alternative Methods) • Study of Glucose Tolerance Test. • Principle of HbA1c Test. • General procedures and demonstration of glucometer operation. • Study of working principle / demonstration of Urine Pregnancy Tests (UPT). (Principle, Procedure, Interpretation and Limitations) • General Study of Normal Blood Parameters of different hormones (From Pathological Reports) • Group discussion/ Seminar/ Quiz/ Projects on Endocrinology • Preparation of Practical Record. 		30
Keywords	<i>Endocrine Glands, Glucose Tolerance Test, HbA1c, Glucometer, Pregnancy</i>		
Signature of Convener & Members (CBoS):			

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Lal S.S. Practical Zoology Vertebrates; Rastogi Publications
- Islam Mofidul, Das Viblab Kumar : Endocrinology with Practicals; Mahaveer Publications
- Verma P.S : A Manual of Practical Zoology Chordates; S.Chand Publications
- Arumugam N : Practical Zoology; Saras Publications.

Reference Books Recommended –

- Hadley: Endocrinology (6th ed. 2009, Prentice Hall)
- Lodish et al :Molecular Cell Biology, W.H.Freeman& Co Ltd.

Online Resources–

- <https://egyankosh.ac.in/bitstream/123456789/33320/1/Unit-4.pdf>

Online Resources–

- <https://www.ncbi.nlm.nih.gov/books/NBK532915/>
- <https://laboratorytests.org/urine-pregnancy-test/>

PART-D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment(CIA):15 Marks

End Semester Exam(ESE):35Marks

Continuous Internal Assessment(CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 &10 Assignment/Seminar +Attendance- 05 otal 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:













