

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

PART- A: Introduction			
Program: Bachelor in Life Science (Honors/ Honors with Research Degree)		Semester -VII	Session: 2024-2025
1	Course Code	ZOSE- 08T	
2	Course Title	Applied Zoology	
3	Course Type	Discipline Specific Elective	
4	Pre-requisite (if, any)	As per Program	
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 the culture techniques of prawn, pearl and fish, Lac culture. ➤ Understand silkworms rearing and their products. ➤ Understand the Bee keeping equipments and apiary management. ➤ Understand dairy animal's management. ➤ Learn the testing of egg and milk quality. ➤ Apply this knowledge for Setting up a self-employment venture in the field. 	
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	<p>Aquaculture: Prawn culture: Culture of fresh water prawn and marine prawn. Preparation of farm for Prawn culture. Preservation and processing of prawn. Export of prawn. Pearl Culture: pearl formation, protocol followed, Fresh Water Fish Culture: Qualities or Characters of Cultivable Fishes, Construction of Fish Farm. Fish Breeding: bundh and induced. Fish Seed: Types, Seed collection: Benchi jal (Shooting net), hatching Hapa. Transport of Seed: Open and closed system, Causes of mortality in transport. Use of chemicals in live fish transport: Anesthetic drugs. Antiseptics and Antibiotics. Harvesting of fish: By hooks and nets (Triangular net, Dip net and Cast net). Fish preservation. Fish diseases and their control.</p>		12
II	<p>Apiculture and Sericulture: Apiculture: Species of honey bees. Morphology and life cycle of <i>Apis indica</i>. Social behaviour of honey bees: Colony organization, division of labour and communication. Methods of Bee keeping: Indigenous and Modern method, appliances used for bee keeping, management of honey bees and their hives, Extraction of honey from the comb and processing, bee Products and their economic importance. Natural enemies & diseases of Bee and their management. Sericulture: Types of silk, Silkworms and their host plants, Life history of <i>Bombyx mori</i> Rearing of <i>Bombyx mori</i>: Rearing racks and trays, disinfectants, rearing appliances, black boxing, Chawki rearing, bed cleaning, mountages. Harvesting of cocoons, Silkworm diseases and their control: Pebrine, Flacherie, Grasserie, Muscardine and Aspergillosis. Silkworm pests and parasites and their management: Uzi fly, Dermestid beetles. Silk reeling techniques. Quality assessment of silk fibre.</p>		11
III	<p>Lac Culture and Vermiculture: Lac Culture History of lac. Cultivation of lac: Host plants, Lac insect and its life cycle. Control of lac insect pests processing and collection of lac. Lac composition, products and uses. Vermiculture: Biology of <i>Eisenia foetida</i>. Rearing of earthworms. Equipments, devices used in vermiculture. Vermicompost Technology: Methods and products, Vermiwash Collection, Composition and use.</p>		11
IV	<p>Dairy management and Poultry farming: Dairy: Introduction to common dairy animals. Techniques of dairy management: System of housing. Milk and milk products. Cattle Diseases and control measures. Poultry: Types of breeds. Methods of brooding and Rearing. Housing and Equipment, Deep litter System, Laying cages, Debeaking, Incubation and hatching of eggs. Management of growers, Layers, Broilers. Feed formulations for chicks, Diseases and control measures. Nutritive value of egg and meet.</p>		11
Keywords	Aquaculture, Apiculture, Sericulture, Poultry farming, Dairy Farming, Vermiculture		
Signature of Convener & Members (CBoS) :			

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Srivastava, C. B. L. (1999). *Fishery Science and Indian Fisheries*. Kitab Mahal publications, India.
- Sardar Singh, *Beekeeping in India*, Indian council of Agricultural Research, New Delhi.
- Dhyan Singh Bisht, *Apiculture*, ICAR Publication.
- Shukla G.S., Upadhyay V.B. *Economic Zoology*, Rastogi Publication
- Ahasan J, Sinha,S.P.(2010) *Handbook of Economic Zoology*, S Chand Publication
- Jabde, P. *Text book of Applied Zoology* (2008), Discovery Publishing Pvt. Ltd

Reference Books Recommended –

- Prost, P. J. (1962). *Apiculture*. Oxford and IBH, New Delhi.
- Sericulture, *FAO Manual of Sericulture*.
- Hafez, E. S. E. (1962). *Reproduction in Farm Animals*, Lea and Fabiger Publishers.
- Knobil, E. and Neill, J. D. (2006). *The Physiology of Reproduction*, Vol. 2, Elsevier Publishers.

Online Resources–

- https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBT1608.pdf
- <https://egov.uok.edu.in/elearning/tutorials/1011020512BR15103CR15Apiculture%20Lac%20culture%20and%20sericultureapiculture%20lac%20culture%20and%20sericulture%20upload.pdf>
- https://kvk.icar.gov.in/API/Content/PPupload/k0160_11.pdf
- <https://dahd.nic.in/sites/default/files/Excerpts%20of%20Poultry%20Farmn%20Manual.pdf>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

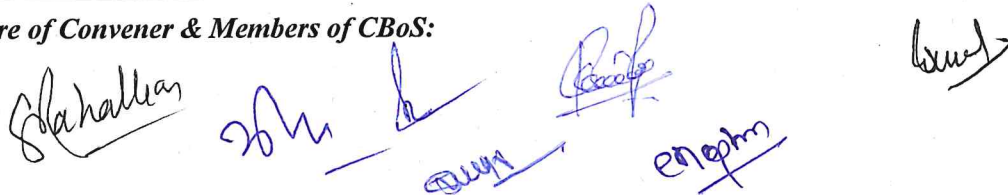
Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

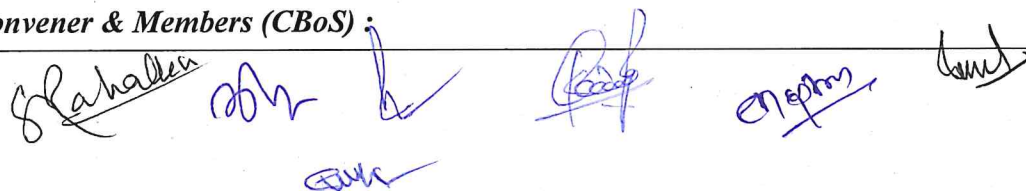
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks 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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1	Course Code	ZOSE-08P	
2	Course Title	Applied Zoology	
3	Course Type	Discipline Specific Elective Lab 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"> ➤ Know common species of carps, prawn, oyster. ➤ Understand and learn the culture techniques of prawn, pearl, fish, honey bee, silkworm, lac, vermicompost. ➤ Understand and Learn division of labor and identification of Honey bees ➤ Identify Lac insect, male female morphology,. ➤ Understand dairy management, breeds of Cow & diseases and learn to analyze to good quality of milk, egg and vermicompost. 	
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	<ul style="list-style-type: none"> ➤ Morphological characterization of common edible fish species. ➤ Identification of major carps. ➤ Morphology of Freshwater and Marine Prawn ➤ Pearl oyster, pearl forming species ➤ Identification of castes of Honey bee and life cycle (through charts/specimens). ➤ Mounting of the sting apparatus. ➤ Worker honey bee with emphasis on leg modifications (through specimens/charts) and whole mount preparation of the 3 pairs of legs, Mouth parts. ➤ Life cycle of mulberry silkworm, <i>Bombyx mori</i> (model/chart/specimens) and life cycle of tasar silkworm, <i>Antheraea mylitta</i>. ➤ Identification of dairy animals ((model/chart/Photographs). ➤ Milk testing: Qualitative test of milk, Determination of the specific gravity of milk by using a mercury lactometer. ➤ External morphology of poultry birds (model). ➤ Test for good quality eggs (Floating test, cracking test) and for fertilized and unfertilized eggs (Light test, Cracking test). ➤ Project report on visit to Fish farm/dairy farm/ Poultry farm/.etc ➤ Group discussion/quiz/seminar on related topics. ➤ Preparation of practical record or Album. 		30
Keywords	Aquaculture, Apiculture, Sericulture, Poultry farming, Dairy Farming		
Signature of Convener & Members (CBoS) :			



PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Upadhyay, Economic Zoology
- Salvamani B R, & Mahadevan R K, Aquaculture Trends and Issues
- Jabde V, Applied Zoology Pradeep
- Shukla Prasad Economic Zoology, Biostatistics and Animal Behaviour

Online Resources–

- https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBT1608.pdf
- <https://egov.uok.edu.in/elearning/tutorials/1011020512BR15103CR15Apiculture%20Lac%20culture%20and%20%20sericultureapiculture%20lac%20culture%20and%20%20sericulture%20upload.pdf>

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:

