

KONGUNADU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)

COIMBATORE – 641 029



DEPARTMENT OF WILDLIFE BIOLOGY
(PG)

CURRICULUM AND SCHEME OF EXAMINATIONS
(CBCS)
(2026 – 2027 and onwards)

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
COIMBATORE – 641 029

DEPARTMENT OF WILDLIFE BIOLOGY

Vision

To increase the knowledge in the area of wildlife both flora and fauna, to understand the value of Wildlife Biology and conservation of the ecosystem, and to promote societal-oriented applied research using ecosystem management by students through high-quality education and research.

Mission

- ❖ To create awareness on the importance of animal diversity and conservation of biodiversity
- ❖ To mold the students in the field of Wildlife Biology both in theory and practical to equip themselves in the area of Wildlife Biology and its related field for their employment opportunities.
- ❖ To involve the students in activities of conservation of wildlife and its related research activities.

Program Outcome (PO)

- PO1** Gain in-depth understanding of the status, distribution, and classification of fishes, amphibians, reptiles, birds, and mammals.
- PO2** Develop skills for identifying species through direct and indirect evidence
- PO3** Enhancing knowledge in forest ecosystems, silviculture, biodiversity conservation, and environmental impact assessment.
- PO4** Expand expertise in environmental legislation, including the Indian Forest Act, Forest Conservation Act, Biodiversity Act, Wildlife (Protection) Act, and wildlife crime investigation.
- PO5** Apply learned skills in research focused on wildlife population estimation, ethology, habitat quality, and carrying capacity assessments for flora and fauna.
- PO6** Provide skills on to assess human-wildlife conflicts and mitigation strategies.
- PO7** Acquired knowledge on Biosphere Reserves, National Parks, Wildlife Sanctuaries, Zoological Parks, Tiger Reserves and Elephant Reserves.
- PO8** Promoting the ability to recognize the physiology, behaviour, and evolutionary adaptations of wild animals.

Program Specific Outcomes (PSO)

After the successful completion of Wildlife Biology program, the students are expected to

- PSO1** Elucidate animal-animal, animal-plant, animal-microbe interactions and their consequences to animals, humans and the environment.
- PSO2** Develop deeper understanding of key concepts of biology at molecular and cellular level, physiology and reproduction at organism level, and ecological impact on animal behaviour.
- PSO3** Learn about managing wildlife, the identification of deceased animal and their organs, cause of death and human-wildlife conflicts.
- PSO4** Develop an understanding of classification and taxonomy of wildlife, as well as about their habits, habitats and conservation.
- PSO5** Focus to prepare the students with research-oriented approach in frontier area of Wildlife Biology to carrying out advanced research.

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
COIMBATORE – 641 029

Programme Name: M.Sc. Wildlife Biology

Curriculum and Scheme of Examination under CBCS

(Applicable to the students admitted during the Academic Year 2026-2027 and onwards)

Semester	Subject Code	Title of the Paper	Instruction hours/ cycle	Exam. Marks			Duration of Exam (Hours)	Credits
				CIA	ESE	Total		
I	26PWB101	Core Paper - 1 Ichthyology and Herpetology	7	25	75	100	3	5
	26PWB102	Core Paper - 2 Ornithology	7	25	75	100	3	5
	26PWB103	Core Paper - 3 Mammalogy	7	25	75	100	3	5
	26PWB1CL	Core Practical -1	4	40	60	100	3	2
	26PWB1E1	Major Elective 1	5	25	75	100	3	5
			30			500		22
II	26PWB204	Core Paper - 4 Ecology and Evolution	6	25	75	100	3	5
	26PWB205	Core Paper - 5 Ethology of Wildlife	5	25	75	100	3	5
	26PWB206	Core Paper - 6 Forest Entomology	5	25	75	100	3	5
	26PWB207	Core Paper - 7 Biodiversity Conservation	5	25	75	100	3	5
	26PWB2CM	Core Practical - 2	2	40	60	100	3	2
	26PWB2CN	Core Practical - 3	2	40	60	100	3	2
	26PWB2E2	Major Elective - 2	5	25	75	100	3	5
			30			700		29
III	26PWB308	Core Paper - 8 Physiology of Wildlife	6	25	75	100	3	5
	26PWB309	Core Paper - 9 Management of Zoological Parks, Sanctuaries and National Parks	6	25	75	100	3	5
	26PWB310	Core Paper - 10 Wildlife Management Techniques	6	25	75	100	3	5
	26PWB3CO	Core Practical - 4	2	40	60	100	3	5
	26PWB3CP	Core Practical - 5	2	40	60	100	3	3
	26PWB3N1	Non-Major Elective - 1	6	25	75	100	3	3
	-	Extra Departmental Course	2	100	-	100	3	2
	26PWB3IT	Internship Training ****		Grade				
			30			700		28
IV	26PWB4Z1	Project & Viva - Voce	24*	40	160	200	-	8
	26PGI4N2	Non-Major Elective - 2	6	100	-	100	3	3
		Total	6			300		11
		Grand Total				2200		90

* 24 hours are allotted for project work, which will not be accounted for staff workload

Note:

CBCS – Choice Based Credit System
CIA – Continuous Internal Assessment
ESE – End of Semester Examinations

**** - The students shall undergo internship training / field work for a minimum period of 14 working days at the end of the Second semester during summer vacation and submit the report in the Third semester which will be evaluated for 100 marks by the concerned guide and followed by an internal *viva-voce* by the respective faculty or HoD as decided by the department. According to their marks the grades will be awarded as given below.

Marks %	Grade
85-100	O
70-84	D
60-69	A
50-59	B
<40	U (Reappear)

Major Elective Papers (2 papers are to be chosen from the following 4 papers)

1. Forestry and Silviculture
2. Ethnobiology
3. Biotechnology and Genetic Engineering
4. Wildlife Crime

Non-Major Elective Papers (2 papers are to be chosen from the following 4 papers)

1. Research Methodology
2. Biostatistics, Application of Computing & Artificial Intelligence 4.0
3. Environmental Science
4. Information Security #

#: To be offered by the respective department

Sub. Code and Title of the Extra Departmental Course (EDC):

Sub. Code: 26PWB3X1 EDC Paper 1: Wildlife Conservation

Note: In core subjects, no. of papers both theory and practical are included wherever applicable. However, the total credits and marks for core subjects remain the same as stated below.

Tally Table:

Subject	No. of Subjects	Total Marks	Credits
Core - Theory / Practical / Project	17	1700	72
Major Elective Papers	2	200	10
Non - Major Elective Paper	2	200	6
EDC Paper	1	100	2
Grand Total	22	2200	90

- 100 % CIA for Fundamentals of Information Security and EDC.
- The students should complete any **MOOC course available for Online learning platforms like SWAYAM, NPTEL, IIT Bombay Spoken Tutorial, e-Pathshala etc.,** before the completion of the 3rd semester and the course completion certificate should be submitted through the HoD to the Controller of Examinations. Appropriate credits will be given to the candidates who have successfully completed.
- **Onsite Training** preferably relevant to the course may be undertaken as per the discretion of the faculty or HoD.
- Extra credits shall be awarded for innovative products/ individual paper presentations and publications in reputed national/ international proceedings and in indexed journals by the PG students for their original research contributions.
 - Product development through Technology Readiness Levels:
 - Phase 1 Level (TRL 1-3) : Basic research: 1 credits
 - Phase 2 Level (TRL 4 -6) : Development and validation : 2 credits
 - Phase 3 Level (TRL 7-9) : Deployment : 3 credits
 - National / International level paper presentation in conferences and publications of full papers in reputed Scopus/ web of Science indexed journals
 - National Level : 1 credit/ paper
 - International Level : 2 credits/ paper
 - Open access Journals are not included
- Extra credits shall be awarded to students who prefer to opt any course out of their programme on self learning mode. No internal components. 100% ESE.

Teaching Pedagogy

Smart Class Room/Powerpoint presentation/Seminar/Quiz/Discussion/Flipped Classroom/Peer Learning/Experimental Learning/Blended learning

Flipped Classroom

Preamble:

- Under flipped classroom model, students review foundational content before class, with class time dedicated to practice, discussion, and problem – solving where the role of the teachers will be facilitating discussions and enabling students to embark on a holistic learning perspectives

Work instructions:

- One flipped session / unit is made mandatory and the course In-charge shall identify and specify the topic to be covered in the flipped session in the lesson plan.
- Detailed session plans must be intimated to all students at least one week in advance.
- Curated content such as LORs, video lectures, animations, and other relevant digital content shall be provided to students in advance to facilitate effective preparation for the flipped classroom session.

Peer Learning

Preamble:

- Peer Assisted learning enables students to learn from each other sharing knowledge in a collaborative learning environment.
- Development of leadership skills and student engagement through student to student academic support.
- Reduce drop out/failure rates of the students and create a supportive academic culture where a high performing or trained student assists peers academically.

Work Instructions:

- Course In-charge shall supervise the programme by periodically reviewing its implementation, conducting review meetings, and monitoring the progress reports.
- Course In-charge shall identify 5 to 6 fast learners based on their academic performance in internal and external examinations.
- Course In-charge shall also identify students who require additional academic support and assign 4 to 5 such students to each fast learner to facilitate peer learning.
- This team will operate remedial classes on a peer learning mode as per the following:
 - a) One session / week / course and each session shall be for 30 minutes in duration, with follow-up learning activities.
 - b) The faculty In-charge shall review attendance records and monitor the academic progress of the students.

Blended learning**Preamble :**

- Blended learning integrates traditional in class instruction with digital tools exposing students to a myriad options for learning from subject experts across the globe
- It is provided with online learning sessions on recorded videos, lecture captured sessions (included under guided library hours), digital resources, and guided sessions facilitated by internal faculty members and external experts through Zoom meets etc.,

Work Instructions:

- For every course, students will be motivated to attend additional webinar/online courses through any interactive learning tools such as, telepresence systems, podcasts, interactive videos etc. with minimum of 2 sessions/course and maximum of 3 sessions/course.

Components of Continuous Internal Assessment

Components		Marks	Total
Theory			
CIA I	75	(75+75 = 150/10)	25
CIA II	75		
Objective Capacity Testing */Seminar		5	
Attendance		5	
Practical			
CIA Practical		25	40
Observation Notebook		10	
Attendance		5	
Project			
Review		30	40
Regularity		10	

*** Objective Capacity Testing:**

For the first assessment, questions shall be set from 2 ½ units (25 questions) and evaluation for 5 marks. The assessment shall be conducted through any authentic online platform, one week prior to the commencement of I CIA theory examinations.

For the second assessment, questions shall be set from 2 ½ units (25 questions) and evaluation for 5 marks. The assessment shall be conducted through any authentic online platform, one week prior to the commencement of II CIA theory examinations.

The average of the first and second assessment scores shall be considered for the final **5 marks** allocation.

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Remembering;**K2**-Understanding;**K3**-Applying;**K4**-Analyzing;**K5**-Evaluating

1. Theory Examination

CIA I & II and ESE: 75 Marks

Knowledge Level	Section	Marks	Description	Total
K1 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	75
K1 – K5 Q11 to 15	B (Either or pattern)	5 x 5 = 25	Short Answers	
K2 – K5 Q16 to 20	C (Either or pattern)	5 x 8 = 40	Descriptive / Detailed	

2. Practical Examination:

Knowledge Level	Section	Marks	Total
K3	Experiments	50	60
K4		10	
K5	Record Work		

3. Project Viva Voce:

Knowledge Level	Section	Marks	Total
K3	Project Report	120	160
K4		40	
K5	Viva voce		

Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 1 –ICHTHYOLOGY AND HERPETOLOGY				
Batch 2026-2027	Hours / Week 7	Total Hours 105	Credits 5	Skill Development

COURSE OBJECTIVES

1. To understand about the concepts of taxonomy and classification of Pisces, Amphibians and Reptiles.
2. To acquire knowledge on the economic importance of fishes, amphibians and reptiles
3. To understand important physiological functions in various vertebrate forms.
4. To know about the distribution of tortoises, terrapins, marine turtles and its migration
5. To know about the distinctive features, distribution of crocodiles and breeding biology of Indian crocodiles

COURSE OUTCOMES

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

K5 to K1	CO1	To understand concepts of taxonomy and its classification of pisces and their economic importance
	CO2	To understand concepts of taxonomy, its procedures, classification of amphibians and their economic importance
	CO3	To understand concepts of taxonomy and classification of reptiles and their economic importance
	CO4	To attain knowledge about locomotory organs, methods of locomotion, feeding and Digestion in select vertebrates.
K1	CO5	To gain knowledge on distinctive features and distribution of turtles, terrapins, tortoise, migration of marine turtles, breeding biology of Indian crocodiles

SYLLABUS

UNIT I (21 HOURS)

PRINCIPLES & TAXONOMY OF PISCES: 1) Characteristics and Classification of Pisces up to order with suitable examples. 2) Types of scales 3) Types of fins and its functions 4) Importance of fishes 5) Fresh water and marine water fishes and their adaptations 5) Fish migration 6) Invasive fishes and its impacts on ecosystem.

UNIT II (21 HOURS)

PRINCIPLES & TAXONOMY OF AMPHIBIANS: 1) Characteristics and Classification of Amphibia up to order with suitable examples, 2) Salient features and distribution pattern of *Duttaphrynus melanostictus*, *Euphlyctis hexadactylus*, *Rhacophorus pseudomalabaricus*, *Tylotriton verrucosus*, *Ichthyophis beddomii*, 3) Importance of Amphibians.

UNIT III (21 HOURS)

PRINCIPLES & TAXONOMY OF REPTILES: 1) Classification and Characteristics features of Reptilia up to Order with suitable examples. 2) Distinctive features and distribution of Common Venomous snakes (Spectacled cobra, Krait, Saw scaled-viper, Russell's Viper) 3) Mildly venomous snakes (Long-nosed whip snake, Common Cat snake), 4) Non-venomous snakes (checkered keelback, Indian rat snake,

Red sand boa, Indian rock python). 5) Biological and economic importance of Reptiles.

UNIT IV (21 HOURS)

COMPARATIVE PHYSIOLOGY: 1) Digestive 2) Respiratory, 3) Circulatory 4) Excretory and reproductive system - fishes (shark), amphibians (frog) and reptiles (lizard).

UNIT V (21 HOURS)

INDIAN TURTLES, TERRAPINS, TORTOISES AND CROCODILES: 1) Distinctive features and distribution of Indian turtles, Indian tortoise and Indian terrapins, 2) Various aspects of migration in sea turtles* 3) Breeding biology of Marine Turtles 4) Distinctive feature, distribution, breeding biology, status and conservation threats of Indian Crocodiles.

*: Self study

TEXT BOOKS

1. Kashyap, V. (2020) A text book of vertebrate zoology. Kedar Nath Ram Nath publishers. Meerut
2. Kotpal, R.L. (2024) Chordata and comparative anatomy
3. Moyle, P.B & J.J Cechi, Jr. (2014) Fishes an Introduction to Ichthyology
4. Vitt, J.L and J P. Caldwell (2014) Herpetology: An Introductory Biology of Amphibians and Reptiles
5. Pough, F. H., Andrews, R. M., Cadle, J. E., Crump, M. L., Savitzky, A. H., & Wells, K. D. (2016). Herpetology. Sinauer Associates, Incorporated, Publishers.

REFERENCES

1. Gupta, S. K., & Gupta, P. C. (2006). General and applied ichthyology: fish and fisheries.
2. Khanna, S.S, and Singh H.R. (2014). Textbook of Fish Biology and Fisheries third Edition
3. Kerridge, R. (2014). Cold blood: adventures with reptiles and amphibians. Random House.
4. McCarthy, (2000). Eyewitness Reptile
5. O'Shea, M. (2011). *Venomous snakes of the world*. Princeton University Press..

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. Systems Biology (NPTEL) web: <https://nptel.ac.in/courses/102106035>
2. [IUCN Red List of Threatened Species](#)
3. [Amphibian Species of the World](#)

Mapping

PSO /CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	H	S	H
CO2	S	H	M	S	H
CO3	S	H	M	S	H
CO4	L	S	S	M	M
CO5	S	H	S	H	H

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. P.Kannan Dr. G.Srinivas Dr. B. Ramakrishnan (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 2 – ORNITHOLOGY				
Batch 2026-2027	Hours / Week 7	Total Hours 105	Credits 5	Skill Development

COURSE OBJECTIVES

1. To understand the Avian classification, structure, morphology, external modification, economic value and threats.
2. To study about the feeding habits and habitat ecology of birds.
3. To study about the skeletal, nervous, respiratory, digestive and urinogenital system of birds.
4. To know about the migration, mechanism of migration.
5. To understand the egg laying, brooding, parental care and nesting of birds.

COURSE OUTCOMES

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

K5 to K1	CO1	To understand the classification of birds, structure and morphology of birds, evolutionary adaptations, threats and their economic importance.
	CO2	To analyze the digestive system of birds, various feeding habits and habitat ecology of birds.
	CO3	To understand the skeletal and respiratory system, migration and nesting of birds
	CO4	To understand the urinogenital system, reproduction, breeding season and breeding behavior of birds
	CO5	To gain knowledge about nervous system and sense organs, egg laying, clutch size and parental care of birds

SYLLABUS

UNIT 1 (21 HOURS)

TAXONOMY OF BIRDS: 1) Taxonomic classification upto order with examples. 2) Structure and external morphology of Birds. 3) Connecting link – Archaeopteryx. 4) Adaptations of flightless birds.

UNIT II (21 HOURS)

ANATOMY AND PHYSIOLOGY: 1) Digestive system, 2) Circulatory system, 3) Respiratory system, 4) Nervous system, 5) Urinogenital system.

UNIT III (21 HOURS)

FORAGING BEHAVIOUR IN BIRDS: 1) Nectarivores, 2) Frugivores, 3) Graminivores, 4) Insectivores, 5) Carnivores, 6) Omnivores, 7) Scavengers. 8) Distribution of birds based on habitats- Terrestrial (Forests, grassland, desert, arid zone, urban and human altered landscapes) and Aquatic birds (coastal and inland water birds).

26PWB102
(21 HOURS)

UNIT IV

BREEDING BIOLOGY: 1) Breeding seasons, factors influencing breeding seasons, 2) Sexual selection, courtship display, pair bond, sexual dimorphism, polymorphism, monogamy, polyandry, polygamy, promiscuity. 2) Co-operative breeding, brood parasites. 3) Nests: Choices of roost site, choices of nesting site, selection of nesting materials, colonial nesting. 4) Types of nests, and multiple nests structures. 5) Egg laying: Clutch size, incubation patterns in different species, hatching and parental care, Nest sanitation, brooding and defense of young ones.

UNIT V

(21 HOURS)

BIRD MIGRATION AND THREATS: 1) Migration in birds: Kinds, Mechanics, timing, physiology, orientation and navigation, and ringing, 2) Flight adaptation in birds, 4) Bird hazards in airports*, 5) Threats to birds: Habitat loss, hunting and anthropogenic pressure 6) Bird watching, 7) Importance of birds.

*: Self study

TEXT BOOKS

1. Faaborg, J. (2020) Book of Birds: Introduction to Ornithology. Texas A&M University Press.
2. Kashyap, V. (2020) A text book of vertebrate Zoology. Kedar Nath Ram Nath publishers. Meerut
3. Kotpal, R.L. (2024) Chordata and comparative anatomy Rastogi Publications. Meerut.
4. Morrison, M. L., Rodewald, A. D., Voelker, G., Colón, M. R., & Prather, J. F. (Eds.). (2018). Ornithology: foundation, analysis, and application. JHU Press.
5. Salim Ali, (2003) The Book of Indian Birds. BNHS. Mumbai

REFERENCES

1. Colbert, E.H. (1969) Evolution of the vertebrates. John Wiley and Sons Inc., New York.
2. Grimmett, R., Inskipp, C., & Inskipp, T. (2016) Birds of the Indian subcontinent. Christopher helm, London.
3. Hilderbrand, M (1988). Analysis of vertebrate structure. IV. Ed. John Wiley and Sons Inc., New York.
4. Romer, A.S. (1949) Vertebrate body, III Ed. W.B. Saunders Co., Philadelphia.
5. Montagna, W. (1960) Comparative anatomy. John Wiley and Sons Inc.
6. Walters, H.E. and L.P. Sayles (1959) Biology of vertebrates. Macmillan & Co., New York.
7. Torrey, T.W. (1963) Morphogenesis of vertebrates. John Wiley and Sons Inc., New York and London

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. General Human Anatomy (WMA): <https://www.mooc-list.com/course/general-human-anatomy-wma>
2. Evolutionary Biology: https://onlinecourses.swayam2.ac.in/cec20_bt06/preview
3. [IUCN Red List of Threatened Species](#)

Mapping

PSO/ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	S	S	M
CO2	S	H	M	S	H
CO3	S	S	H	H	H
CO4	S	S	L	M	M
CO5	M	H	L	S	H

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. N. Ezhilarasi Dr. B. Ramakrishnan Dr. P.Kannan Dr. G.Srinivas (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 3 –MAMMALOGY				
Batch 2026-2027	Hours / Week 7	Total Hours 105	Credits 5	Skill Development

COURSE OBJECTIVES

1. Understand the classification of mammals.
2. Acquire the knowledge of mammalian physiology.
3. Knowledge about different mammalian species.
4. Levels of organization in mammals.
5. Analyze the ecological and evolutionary affinities of mammals.

COURSE OUTCOMES

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

K5 to K1	CO1	To understand the mammalian classification, physiology of different systems, evolutionary adaptation and their economic importance.
	CO2	To know about the various carnivorous mammals, their distinctive features, distribution, habit and various strategies to protect them.
	CO3	To know about the various herbivorous mammals, their distinctive features, distribution, habit and various strategies to protect them.
	CO4	To acquire a knowledge on life history parameters, population dynamics and various population estimation methods
K1	CO5	To study the history, adaptations, behavior, social organization, mating systems, communication.

SYLLABUS

UNIT I (21 HOURS)

TAXONOMY AND CLASSIFICATION OF MAMMALS: 1) Classification of mammals upto order with suitable examples. Physiology of mammals: 2) digestion, 3) reproduction 4) endocrine 5) excretory 6) dental formulae.

UNIT II (21 HOURS)

HERBIVORES: 1) Order Artiodactyls: Deer- Kashmir stag, brown antlered deer, swamp deer, hog deer, spotted deer, barking deer, musk deer, mouse deer, sambar deer, antelope –black buck, four-horned antelope. Goat- Himalayan tahr, Nilgiri tahr, Wild buffalo, Gaur, Pig- Wild Boar. 2) Order Perissodactyls: Horses- wild Ass, Rhinoceros- one horned Rhinoceros. 3) Order Proboscidea: Elephants.

UNIT III (21 HOURS)

CARNIVORES: 1) Big Cats: Tiger, Lion, Leopard, and Snow Leopard. 2) Lesser Cats: Golden cat, Leopard cat, Fishing cat, Jungle cat. 3) Civet: Tiger civet, Large Indian civet, Small Indian civet, Palm civet, Binturong or Bear cat, 4) Hyena: Stripped hyena, 5) Mongoose: Common Mongoose, Small Indian, Stripped necked mongoose, Crab-eating mongoose. 6) Dogs: Wolf, Jackal, Red Fox, Indian Fox, Dhole, 7) Bears: Sloth Bear, Himalayan Black Bear, Brown Bear, 8) Weasels: Common and Smooth Indian Otter. 9) Pholidota- Pangolin. 10) Rodents: Malabar spiny dormouse

UNIT IV

(21 HOURS)

POPULATION DYNAMICS: 1) Demographic and life history parameters, evolution of life history parameters: r & K selection, allometry, aging and sexing, life tables, age and stage structures models, methods of estimation of life history parameters, 2) Population dynamics: exponential, logistic and other forms of growth of population, density dependent and independent growth 3) Predator-prey systems, 4) Carrying capacity.

(21 HOURS)

UNIT V

ADAPTATION, BEHAVIOUR AND IMPORTANCE OF MAMMALS: 1) History of mammalogy: Adaptations in mammals, hibernation, torpor, aestivation, locomotion and water regulation. 2) Metabolism and thermoregulation: Ectothermy, homeothermy and cold stress, body size versus homeothermy. 3) Body size variation in mammals and its influence on life history: Metabolic rate, weight constraints, feeding behaviour, niche width and reproduction. 4) Mammalian skin and its derivatives. 5) Evolutionary adaptations in mammals. 6) Importance of Mammals*.

*: Self study

TEXT BOOKS

1. Attenborough, D. (2002). The life of mammals (Vol. 2). Random House.
2. Feldhamer, G. A. (2007). Mammalogy: adaptation, diversity, ecology. JHU press.
3. Hall, K. (2016). Mammals: A Compare and Contrast Book. Arbordale Publishing.
4. Menon, V. (2023). Indian mammals: a field guide. Hachette India.
5. McNab, C. (2016). Mammals: 300 Amazing Animals.
6. Prater, S. H. (1997). The book of Indian mammals. Bombay Natural History Society.

REFERENCES

1. Genoways, H. H. (Ed.). (2013). Current Mammalogy: Volume 1 (Vol. 1). Springer Science & Business Media.
2. Martin, R. E., Pine, R. H., & DeBlase, A. F. (2011). A manual of mammalogy: with keys to families of the world. Waveland Press.
3. Ryan, J. M. (2018). Mammalogy techniques lab manual. Johns Hopkins University Press.
4. Ronald, M. (1999). Walkers Mammals of the World-v. 1. John Hopkins University Press.
5. Christian, J. J., Mayer, W. V., & Van Gelder, R. G. (1963). Physiological Mammalogy Volume I.
7. Mayer, W. V., & Van Gelder, R. G. (1965). Mammalian reactions to stressful environments Volume 2.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. Ecology and Wildlife Conservation (Future Learn): <https://www.mooc-list.com/course/ecology-and-wildlife-conservation>
2. WildlifeConservation:<https://nptel.ac.in/courses/102/104/102104068/>
3. Wildlife Ecology: https://swayam.gov.in/nd1_noc20_bt38/preview
4. [IUCN Red List of Threatened Species](#)

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	S	H
CO2	S	L	S	H	S
CO3	S	L	S	H	S
CO4	H	S	M	M	S
CO5	M	S	H	S	H

S - Strong

H-High

M - Medium

L-Low

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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the Practical: Core Practical 1 – ICHTHYOLOGY & HERPETOLOGY, ORNITHOLOGY AND MAMMALOGY				
Batch 2026-2027	Hours / Week 4	Total Hours 60	Credits 2	Skill Development

Pre-requisite: Fundamental knowledge on animal anatomy and biodiversity

COURSE OBJECTIVES

1. To identify the amphibians based on morphological features
2. To identify venomous and non-venomous snakes
3. To identify the birds and mammals
4. To understand important physiological functions in various vertebrate forms.
5. To understand the functions of nervous system and sense organs.

COURSE OUTCOMES

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

K5 to K3	CO1	Know morphometric character of fishes and reptiles
	CO2	Attain knowledge about locomotory organs, locomotion, feeding and digestion of some vertebrates
	CO3	Gain knowledge about vertebrate classification, as well as structure and function of some vertebrates
	CO4	Know about mist net techniques and methods of bird ringing
	CO5	Understand the evolutionary modifications of fore limb from fishes to mammals

SYLLABUS

MAJOR

1. Identification of Amphibians
2. Identification of venomous and non-venomous snakes
3. Identification of Bird in the field
4. Demographical structure of Asian elephants
5. Study of epidermal derivatives: Skins, Nails, Scales, Claws, Feathers

MINOR

1. Identification of scales in the Fishes (ctenoid, placoid, cycloid)
2. Types of feathers in the birds (Quill feather, Down Feathers, Filo plume Feathers)
3. Types of beak in the birds (flower probing-sunbird, tearing- kite, cracking-hornbill)
4. Types of feet in the birds (parrot, partridge, kite)
5. Dentition in mammals (deer, wild boar, leopard)

SPOTTERS

1. Skull of frog (Amphibians),
2. Skull of birds (Aves),
3. Skull of rabbit (Mammals)
4. Different types of horns in mammals
5. Digit structure of mammals
6. Identification of Asian elephants and African elephants

7. Tongue of different vertebrates
8. Identification of tiger and leopard skin

SUBMISSIONS

1. Submit an album of amphibians, reptiles, birds and mammals of classification and ecological importance / field trip.
2. Bonafide Record

TEXT BOOKS

1. Khanna, S.S, and Singh H.R. (2014). Textbook of Fish Biology and Fisheries 3rd Edition
2. Prater, S. H. (1997). The book of Indian mammals. Bombay Natural History Society.
3. Sinha, J., Chatterjee A.K., Chattopadhyay P. (2011). Advanced Practical Zoology Arunabha Sen Publishers.
4. Kashyap, V. (2020) A text book of vertebrate Zoology. Kedar Nath Ram Nath publishers
5. Whitaker, R and A. Captain (2006). Common Indian snakes: a field guide. Macmillan.
6. Daniels, R. R. (2005). Amphibians of peninsular India. Universities Press.268

REFERENCES

1. Menon, V. (2023). Indian mammals: a field guide. Hachette India.544p.
2. Menon, V and A.Kumar (1999) Wildlife Crime: An Enforcement Guide. Natraj Publisher, Delhi. 110p.
3. Grimmett, R., Inskipp, C., & Inskipp, T. (2016). Birds of the Indian subcontinent. Chistopher helm, London.
4. Salim Ali, (2003) The Book of Indian Birds. BNHS. Mumbai
5. Preeti Guptha and Mridula Chaturvedi. (2000). Modern Experimental Zoology
6. Verma. (2000). Manual of Practical Zoology: *Chordates* S. Chand Publishing
7. Pough, F. H., Andrews, R. M., Cadle, J. E., Crump, M. L., Savitzky, A. H., & Wells, K. D. (2016). Herpetology. Sinauer Associates, Incorporated, Publishers.

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	S	M	M	S
CO2	S	S	S	S	S
CO3	S	S	S	M	S
CO4	M	S	M	M	S
CO5	S	S	M	S	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. P.Kannan Dr. G.Srinivas Dr. B. Ramakrishnan Dr. G.Sivasubramanian Mr. R. Marimuthu Dr. N. Ezhilarasi (Dr. G.Sivasubramanian) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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KONGUNADU ARTS AND SCIENCE COLLEGE (Autonomous)
Coimbatore – 641029
Model Question Paper (Practical)

End of Semester Examination Question paper pattern
(For the candidates admitted from the academic year 2026-2027 onwards)

Duration: 3 Hours

Max. Marks: 60 Marks

BREAK UP OF MARKS

Core Practical 1: Ichthyology & Herpetology, Ornithology and Mammalogy

S. No	Distribution Component	Marks
1.	Major Experiments	20
2.	Minor Experiments	10
3.	Spotters	15
4.	Submission	05
5.	Record Work	10
TOTAL		60 Marks

Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 4 – ECOLOGY AND EVOLUTION				
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 5	Skill Development

COURSE OBJECTIVES

1. To understand basics of ecology.
2. To elucidate the interaction of animals with ecosystem.
3. To know about the various pollution
4. To understand the evolution, fossils and fossilization
5. To understand the basic phylogeny of animals.

COURSE OUTCOMES

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

K5 to K1	CO1	To learn various limiting factors in ecology, population ecology and community ecology
	CO2	To understand about the structure and functions of various ecosystems and biogeochemical cycles
	CO3	To learn about various pollutions, Environmental Impact Assessment, remote sensing and Geographical Information System
	CO4	To understand the origin of life on earth, evolutionary time scale, concepts of evolution, fossil and fossilization
K1	CO5	To know about the concepts of phylogenetics, DNA hybridization, molecular clocks and DNA barcoding

SYLLABUS

UNIT I (18 HOURS)

LIMITING FACTORS IN ECOLOGY: 1) Light, Temperature, Soil, Law of minimum, Law of tolerance. 2) Population ecology: Density, Natality, Mortality, Growth curves, Equilibrium fluctuation, Biotic potential, Regulation. 3) Community ecology: Structure, Stratification, Ecotone and Edge effect, Ecological niche, Ecological succession.

UNIT II (18 HOURS)

ECOLOGICAL FACTORS: 1) Ecosystem structure, dynamics, energy flow, Primary production and decomposition. 2) Structure and function of ecosystems: Terrestrial (forest, grassland) and aquatic (freshwater, estuarine, marine), 3) Biogeochemical cycles: gaseous (Carbon, Nitrogen, Oxygen), Sedimentary (Sulphur, Phosphorus).

UNIT III (18 HOURS)

POLLUTION IN THE ECOSYSTEM: 1) Air, Water, Land, Noise 2) Thermal, Radioactive hazards 3) Environmental Impact Assessment (EIA). 4) Space Ecology 5) Global warming and climate change.

26PWB204

UNIT IV (18 HOURS)

THEORIES OF ORGANIC EVOLUTION: 1) Origin of life on earth, Geological Timescale, 2) Biochemical origin of life Oparin and Haldane, Urey Miller and 3) Lamarckism 4) Neo-lamarckism 5) Darwinism 6) Neo-darwinism 7) Mutation

UNIT V (18 HOURS)

POPULATION GENETICS AND EVOLUTION: 1) Variations and its concept 2) Gene Frequency 3) Hardy Weinberg Equilibrium 4) Gene flow, Genetic drift, Bottleneck effect, Founder principle 5) Speciation 6) Patterns of Evolution – Divergent and convergent evolution 7) Fossils and Fossilization - Ariyalur and Siwalik. *

*: Self study

TEXT BOOKS

1. Clarke, G.L., (1954). Elements of Ecology. John Wiley & Sons. Inc Toppan Company Ltd.
2. Sharma, P.D (2019) Ecology and Environment. Rastogi Publications
3. Ranga, M.M. (2006). Animal Ecology. Agrobios Jodhpur
4. Odum, E. P. (1971). Fundamentals of Ecology. Third Edition. Nataraj Publishers, Dehradun.
5. Verma, P. S., & Agarwal, V. K. (2022). *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology: Evolution and Ecology*. S. Chand Publishing. New Delhi.
6. Rastogi, V. B. (2024). *Organic evolution*. Medtech. New Delhi

REFERENCES

1. Yadav, P. R. (2003). Fossils. Discovery Publishers
2. Arora, M. P. (1992). An Introduction to paleontology. Himalaya Publishers.

Mapping

PSO / CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	L	H	M	S
CO2	S	S	L	M	H
CO3	S	H	H	H	S
CO4	S	H	L	S	H
CO5	S	H	M	S	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. G.Srinivas Dr. P.Kannan Dr. B. Ramakrishnan Dr. N. Ezhilarasi Dr. G.Sivasubramanian (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 5 –ETHOLOGY OF WILDLIFE				
Batch 2026-2027	Hours / Week 5	Total Hours 75	Credits 5	Skill Development

COURSE OBJECTIVES

1. To provide overview of introduction to behaviour in wild animals.
2. To make aware of pheromones and hormonal actions in animal behaviour.
3. To understand the biological rhythms and communication systems.
4. To narrate the breeding and parental care of wildlife.
5. To understand the social behaviour of mammals.

COURSE OUTCOMES

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

K5 to K1	CO1	To understand the concepts, types and analysis of animal behaviour
	CO2	To know about the physiological mechanism of animal behavior, role of hormones and pheromones, and various methods of studying behaviour
	CO3	To analyze the biological rhythms, various communication system of animals, foraging behavior of mammals and birds
	CO4	To gain knowledge about the breeding behavior of animals and parental care in amphibians, reptiles and mammals
	CO5	To understand the social commensalism and social behaviour of selected mammals.

SYLLABUS

UNIT I (15 HOURS)

BEHAVIOURS IN ANIMALS: 1) Types of Behaviours: classical and modern concepts, 2) Fixed action pattern 3) Learning, Imprinting, habituation, 4) Analysis of behaviour pattern: taxis, kinesis and reflexes, 5) Methods of studying behavior and 6) Ethogram.

UNIT II (15 HOURS)

HORMONES AND PHEROMONES: 1) Physiological mechanism of behaviour 2) Neural behaviour 3) Perceptual mechanism, 4) Role of hormones and pheromones in behaviour of animals, 5) Predator detection, predator tactics, 6) Altruism and evolution

UNIT III (15 HOURS)

BEHAVIOURAL PATTERN: 1) Biological rhythms: Circadian, Lunar, Tidal and animal rhythms. 2) Animal communication: Visual, Auditory, Chemical and Vocalization in Mammals, Birds and Insects. 3) Foraging Behaviour in Mammals and Birds*, 4) Origin and significance of play.

UNIT IV (15 HOURS)

BREEDING BEHAVIOUR OF ANIMALS: 1) Courtship display, 2) Sexual selection, pair bond, 3) Sexual dimorphism, polymorphism, 4) monogamy, Polyandry, polygamy, promiscuity, 5) Cooperative breeding, brood parasites, 6) Parental care in Amphibians, Reptiles and Mammals.

UNIT V

(15 HOURS)

SOCIAL BEHAVIOURS IN ANIMALS: 1) Aggression, Competition, Social spacing, 2) Territory, Dominance. 3) Animal association: Mutualism, parasitism, commensalism, symbiosis, predation and amensalism. 4) Social behavior of Primates, Elephants and Lion.

*: Self study

TEXT BOOKS

1. Agarwal V.K.(2009). Animal Behaviour (Ethology). S. Chand Publishing.
2. Mathur, R. (2022). Animal behaviour. Rastogi Publications.
3. Mandal, F. B. (2015). Textbook of animal behaviour (3rd ed.). PHI Learning Pvt. Ltd.
4. McFarland D (ed.),1981.The Oxford Companion to Animal Behaviour, Oxford University Press, Oxford.
5. Ridley M, (1968). Animal Behaviour–A concise Introduction, Blackwell Scientific Publications, Oxford.
6. Prasad, S. (2018). Animal behaviour. CBS Publishers. New Delhi.
7. Ranga, M.M. 2002. Animal Behaviour. Agrobios. Jodhpur.

REFERENCES

1. Slater PJB. (1985). An Introduction to Ethology, Cambridge University Press, Cambridge.
2. Natarajan P and Arumugam N. (2018). Animal Behaviour–Ethology. Saras Publication
3. Wallace R.A, (1979).The Ecology and Evolution of Animal Behaviour, Goodyear Publishing Company Inc., Santa Monica, California.
4. Wilson E.O, (1978). Sociobiology, The Belknap Press, Harvard University Press, Cambridge, MA.
5. Wyatt. T.D (2003). Pheromones and Animal Behaviour. Cambridge University Press

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	M	H	S
CO2	M	H	M	S	S
CO3	H	S	H	S	S
CO4	H	H	M	S	H
CO5	S	H	H	S	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. N. Ezhilarasi Dr. P.Kannan Dr. G.Sivasubramanian Dr. G.Srinivas (Dr. G.Sivasubramanian) Signature of the Course in-charge	 (Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 6 – FOREST ENTOMOLOGY				
Batch 2026-2027	Hours / Week 5	Total Hours 75	Credits 5	Skill Development

COURSE OBJECTIVES

1. To learn the classification and taxonomy of insects.
2. To study the digestive, reproductive, excretory system of insects.
3. To study about biology and economic importance of insects.
4. To study the pest of teak, sandalwood and bamboo.
5. To learn the insect infestation, survey and control measures.

COURSE OUTCOMES

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

K5 to K1	CO1	Gain knowledge on classification, taxonomy, morphology, anatomy, structure and various mouthparts of insects
	CO2	Elucidate physiology, digestion, muscular system, excretory system and reproductive system of insects
	CO3	Gain knowledge on biology of honey bee, silk moth, lac insect, culture methods of selected insects and various beneficial insects
	CO4	Understand the destructive insects, biology, pests of teak, sandalwood and bamboo, damage caused and control measures
	CO5	Understand the detection and estimation of insect infestation and their control methods

SYLLABUS

UNIT I (15 HOURS)

TAXONOMY AND ANATOMY: 1) Classification and taxonomy- Classification of insects up to order with examples. 2) Morphology and anatomy of insects- divisions of the body and integument 3) Head – Antennae and its type 4) Mouth parts and its types. 5) Thorax and legs 5) Modifications of the basic leg structure 6) Basic structure of wings.

UNIT II (15 HOURS)

PHYSIOLOGY OF INSECTS: Physiology of Insects: 1) Digestive system - Digestion - transport 2) Respiratory – physiology of gas exchange*; 3) Excretory system –osmoregulation 4) Excretory system – structure and function 5) Metamorphosis 6) Reproductive system.

UNIT III (15 HOURS)

BENEFICIAL INSECTS: 1) Biology of Honey bee 2) Biology of Bombyx mori 3) Biology of Lac insect 4) Culture methods for honey bee and silk worm-Appliances used and problems related to these cultures 5) Beneficial insects-Pollinators, 6) Predators, parasitoids -scavengers -weed killers.

UNIT IV (15 HOURS)

SAMPLING AND EVALUATION OF INSECT PEST: 1) Sampling techniques 2) Biological evaluation 3) Pest surveillance and estimation 4) Insect collection, preservation 5) Molecular approaches in insect identification. 6) Control of pest insects, direct and indirect methods.

UNIT V (15 HOURS)

DESTRUCTIVE INSECTS: Types of Pests- 1) forest nursery pests- seed feeders, sapling root borers, cutworms- Piercing and sucking insects, 2) Defoliators, 3) Borers-bark borers, stem borers, root borers feeder 4) Biology – control measures – damages caused – Insect Pest of Teak, 5) Biology – control measures – damages caused – Insect Pest of Sandalwood 6) Biology – control measures – damages caused – Insect Pest of Bamboo 6) Pest Management Theory.

*: Self study

TEXT BOOKS

1. Chapman. R.F. (1998). The insects structure and function .4th edition, Cambridge University Press, UK.
2. Pedigo, L. P., Rice, M. E., & Krell, R. K. (2021). *Entomology and pest management*. Waveland Press.
3. Nalinasundari M.S. and R. Santhi. (2008). Entomology, MJP Publishers, Chennai
4. Kashyap, V. (2020). A text book of vertebrate zoology. Kedarnath Ramnath. Meerut
5. Nayar, K.K., Ananthakrishnan, T.N. and David, B.V. (1986). General and applied entomology, Tata McGraw Hill Publications, New Delhi.
6. Tambhare, D.B. 2023. Modern Entomology. Himalaya Publishing House. Mumbai.

REFERENCES

1. Vasantharaj David, B. (2001). Elements of Economic Entomology, Popular Book Depot. Chennai – 15.
2. Ambrose, P. D. (2004). The Insects; Structure, function and Biodiversity. Kalyani publishers, Ludhiana, New Delhi, Chennai.
3. Imms, A.D. (1965). A General Textbook of Entomology, ELBS, London.
4. Metcalfe, C. L and Flint, WP (1973). Destructive and Useful Insects, McGraw-Hill, New York.
5. Snodgrass, R.E. (1985). Principles of Insect Morphology, McGraw Hill and Co., New York.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. <https://canterbury.libguides.com/biol>

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	S	H
CO2	M	S	M	L	M
CO3	S	H	H	M	H
CO4	S	H	H	H	H
CO5	H	M	S	H	S

S – Strong H-High M - Medium L-Low

Content prepared by (Based on Inputs) Dr. G.Srinivas Dr. B. Ramakrishnan Dr. P.Kannan Dr. N. Ezhilarasi Mr. R. Marimuthu Dr. G.Sivasubramanian (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 7 – BIODIVERSITY CONSERVATION				
Batch 2026-2027	Hours / Week 5	Total Hours 75	Credits 5	Skill Development/ Employable

COURSE OBJECTIVES

1. To understand the significance of biodiversity.
2. To understand the conservation of natural resources.
3. To make understand the wildlife organizations.
4. To gain knowledge about protected areas and its conservation.
5. To understand the wildlife laws and legislation.

COURSE OUTCOMES

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

K5 to K1	CO1	Learn the significance of biodiversity, biogeographical classification of India, loss of biodiversity, hotspots, <i>in-situ</i> and <i>ex-situ</i> conservation.
	CO2	Understand the natural resources, distribution and conservation of forests, types of wetlands and their importance.
	CO3	To make understand the state, national and international organizations, wildlife policies and biodiversity acts.
	CO4	Understand the concept of protected area, wildlife wealth and their depletion, wildlife conservation approaches and limitations.
	CO5	Understand the wildlife trade, wildlife laws and legislation, human-wildlife conflict and mitigation measures, project tiger and elephant.

SYLLABUS

UNIT I (15 HOURS)

BIODIVERSITY CONSERVATION: 1) Definition, Types, Genetic, Species and Ecosystem diversity. 2) Values of biodiversity. 4) Biodiversity measurements, mega diversity centers, Loss of biodiversity, Hotspots, Biosphere Reserves 5) Conservation strategies: *In-situ* - National Parks, Wildlife Sanctuaries, Community Reserve and conservation Reserves. 6) *Ex-situ* – Zoological Park, aquarium, Botanical garden, Arboretum, Museum 7) *Ex-situ* techniques - Seedbank, Cryopreservation, Gene banks, Sperm banks, DNA banks and Tissue culture.

UNIT II (15 HOURS)

CONSERVATION OF NATURAL RESOURCES: 1) Resources types: Food, water, energy and minerals. 2) Human impact on Terrestrial and Aquatic resources, 3) Distribution and conservation of Forests, Grasslands and semi-arid habitats of India. 4) Wetland Habitats of India: Definition and types of wetlands, importance of wetlands and their conservation issues. 5) Convention on wetlands of International 6) Ramsar sites and convention importance.

UNIT III (15 HOURS)

ORGANIZATIONS IN WILDLIFE CONSERVATION: 1) Organization at State level: State Biodiversity Board, 2) National level: WCCB, NBA, ZSI, BSI, FRI, FSI, 3) International level: CITES, IUCN, CBD, WWF 4) NGOs: BNHS, WTI, Zoo Outreach Organization, WCT and WPSI.

UNIT IV

(15 HOURS)

WILDLIFE IN INDIA: 1) Biogeographical classification of India. 2) Flora and Fauna of India 3) Threats, Endangered and Endemic species. 4) IUCN Red List Categories 5) Reasons for wildlife depletion in India. 6) Wildlife Habitat: Characteristics, Fauna and Adaptations with special reference to Tropical 7) Wildlife conservation approaches and limitations

UNIT V

(15 HOURS)

MANAGEMENT OF WILDLIFE: 1) Wildlife Trade and legislation: Assessment, documentation, Prevention of trade. 2) Wildlife laws and ethics: Wildlife (Protection) Act, 1972 and its Amendments. 3) National Forest Policy –1988*, 4) Biodiversity Act - 2002. 5) Human–wildlife interactions management: Human and animal injury and causalities, livestock lifting, crop and property damage, mitigation measures and role of corridor, Case study on innovative technology to mitigate human-wildlife interactions 6) Important projects for the conservation of wildlife: Project Tiger and Project Elephant.

*: Self study

TEXT BOOKS

1. Asthana. D.K. and Meera Asthana. (2010). A text book of Environmental Studies. S. Chand and Company LTD, New Delhi.
2. Saharia, V.B. (1982) Wildlife in India, Nataraj Publishers, Dehradun.
3. Seshadri, B. (1986) India's Wildlife Reserves, Sterling Publishers Pvt. Ltd., New Delhi.
4. Giles, R.H. Jr. (Ed) 1984. Wildlife Management Techniques 3rd edition. The wildlife Society, Washington. D.C. Nataraj Publishers, Dehradun. India.
5. Manikandan, K. and Prabhu, S. (2019). Indian Forestry A Breakthrough Approach to Forest Service. Jain Brother Publishers.
6. Robinson, Wl. and Eric, G. Bolen, (1984). Wildlife Ecology and Management Mac Millan Publishing Co, New York. Pp 478.
7. Dasmann R F, (1964). Wildlife Biology, John Wiley & Sons, New York, p231
8. Krishnamurthy, K. V. (2023). *An advanced textbook on biodiversity: Principles and practice*. CBS Publishers & Distributors, New Delhi.

REFERENCES

1. Bhargav, P. (2025). *Wildlife law for rangers*. Wildlife First. Bengaluru.
2. Warning RH and Schlesinger WH, (1985). Forest Ecosystems: Concepts and Management. Academic Press, New York.
3. Robinson, Wl. and Eric, G. Bolen, (1984). Wildlife Ecology and Management Mac Millan Publishing Co, New York.
4. Seshadri, B. (1986) India's Wildlife Reserves, Sterling Publishers Pvt. Ltd., New Delhi.
5. Menon.V. *et al*, 2017. Right of passage: elephant corridors of India, Conservation reference series no. 3, 2nd edition, Wildlife Trust of India, New Delhi

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. <https://swayam.gov.in/>
2. <https://www.mooc.org/>
3. <https://nptel.ac.in/>
4. [National Biodiversity Authority](#)
5. [Central Zoo Authority](#)
6. [Home || Ministry of Environment, Forest and Climate Change](#)

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	S	H	S
CO2	S	H	H	S	H
CO3	S	L	S	S	M
CO4	S	L	S	S	H
CO5	H	M	S	S	M

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Mr. R. Marimuthu Dr. B. Ramakrishnan Dr. G.Srinivas Dr. P.Kannan Dr. G.Sivasubramanian Dr. N. Ezhilarasi (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Practical 2 ECOLOGY & EVOLUTION AND ETHOLOGY OF WILDLIFE				
Batch 2026-2027	Hours / Week 2	Total Hours 30	Credits 2	Skill Development

COURSE OBJECTIVES

1. Explain core concepts in ecology and summarize our ecological understanding of environmental problems
2. To train how the biological data are processed and interpretations are made.
3. To teach the prey and predator relationships of animals.
4. To teach various behaviors of wild animals

COURSE OUTCOMES

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

K3 to K5	CO1	Understand the classification of the ecosystem
	CO2	Calculate various species diversity measures
	CO3	Understand the physical and chemical concepts in biology.
	CO4	Understand how to study the behaviour
	CO5	Understand communal ecology in mammals.

SYLLABUS

MAJOR

1. Estimation of dissolved Carbon dioxide (CO₂)
2. Estimation of dissolved Oxygen (O₂)
3. Population Viability Analysis (PVA)
4. Focal animal sampling (Video clipping model can be used)
5. Scan sampling (Video clipping model can be used)

MINOR

1. Determination of pH (Water)
2. Food web and Nutrient Cycling (Demonstration only).
3. Paleo-evolution of mammoths (Demonstration only).
4. Animal Communication
5. Parental care

SPOTTERS

1. Terrestrial Ecosystems
2. Aquatic Ecosystem
3. Fossil and its types
4. Identification of planktons
5. Animal communication
6. Fixed Action Pattern
7. Pheromones trails
8. Parental care in Mammals

Submission at the time of Practical Examination

1. Report on the field trips/ museum
2. Bonafide Record

TEXT BOOKS

1. Agarwal V.K.(2009). Animal Behaviour (ETHOLOGY). S. Chand Publishing.
2. Iyyer, E and T.N. Ananthakrishnan. (2021). Manual of Zoology.
3. Mathur, R. (2022). Animal behaviour. Rastogi Publications.
4. Odum, E. P. (1971). Fundamentals of Ecology. Third Edition. Nataraj Publishers, Dehradun.
5. Prater, S. H. (1997). The book of Indian mammals. Bombay Natural History Society.
6. Sinha,J., Chatterjee. A.K., and Chattopadhyay P.2011. Advanced Practical Zoology Arunabha Sen Publishers.
7. Verma, P.S. and V.K. Agarwal, (1983). Environmental Biology (Principles of Ecology), S. Chand & Co., New Delhi.

REFERENCES

1. Gupta P and Chaturvedi, M. (2000). Modern Experimental Zoology
2. Jain J.L, Sunjay Jain S and Nitin Jain. (2007). Fundamentals of Biochemistry
3. Eva. O (2009). Toxicology Laboratory Lab Manual. Kendall Hunt Publishing
4. Verma. P.S. (2000). Manual of Practical Zoology: Chordates. S. Chand Publishing

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	M	S	H
CO2	S	M	S	S	H
CO3	S	S	H	S	S
CO4	S	H	M	S	S
CO5	S	H	S	S	H

S - Strong

H-High

M - Medium

L-Low

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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Practical 3 FOREST ENTOMOLOGY AND BIODIVERSITY CONSERVATION				
Batch 2026-2027	Hours / Week 2	Total Hours 30	Credits 2	Skill Development

COURSE OBJECTIVES

1. To know the insects and its role
2. To study the life cycle of select insect species
3. To know the *In-situ* and *Ex-situ* conservation of wildlife
4. To address and evaluate the human wildlife conflict
5. Assessment of illegal wildlife trade

COURSE OUTCOMES

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

K3 to K5	CO1	Understand about the role of insects
	CO2	Gain knowledge on damages caused by the destructive insects.
	CO3	Know about the beneficial insects.
	CO4	Gain knowledge on <i>in-situ</i> and <i>ex-situ</i> conservation of wild animals
	CO5	Understand about wildlife and its management

SYLLABUS

MAJOR

1. Digestive system / Nervous system of an insect
2. Study the life cycle of Bee
3. Study the life cycle of Silkworm
4. Diversity indices
5. Human-wildlife conflict: elephant, leopard, tiger, primates, wild boar, deer, antelope and birds

MINOR

1. Mode of insect attack on trees
2. Identification of an Elephant Corridor
3. Wildlife crimes: tusk, skin, nail, hair, meat, feather and beak
4. Invasive alien species: Prosopis, Lantana, Chromolaena, Senna, Parthenium and Wattle

SPOTTERS

1. Butterflies: red helen, common crow, common pierrot, common emigrant and yellow orange tip
2. Gall insects, wood boring insects, bark beetle and fluid feeding insect
3. Plant species: Teak, bamboo, sandal, amla, and sissoo
4. Beneficial organisms
5. Economic importance

Submission at the time of Practical Examination

1. Report on the field trips /museums/ wildlife census/ insect album etc.)
2. Bonafide Record

TEXT BOOKS

1. Gopal, R. (1992). Wildlife management techniques
2. Verma P. S. (2000). A Manual of Practical Zoology S. Chand Publication
3. Giles RH Jr. (ed.). (1984). Wildlife Management Techniques, 3rd ed. The Wildlife Society, Washington D.C., Nataraj Publishers, Dehra Dun.
4. Robinson WL and Eric G Bolen, (1984). Wildlife Ecology and Management, Maxmillan Publishing Company, New York
5. Rodgers W.A. (1991). Techniques for Wildlife Census in India-A field Manual: Technical Manual-T M -2. WII.

REFERENCES

1. Kotpal. R.L. (2007). Modern Text Book of Zoology: Vertebrates
2. Saharia, V.B, (1982). Wildlife of India, Natraj Publishers, Dehra Dun
3. Teague RD (ed.), (1987). A Manual of Wildlife Conservation (The Wildlife Society Washington D.C.). Nataraj Publishers, Dehra Dun
4. WII. A Guide to Chemical Restraint of Animals

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	M	H
CO2	S	M	S	H	S
CO3	S	M	S	M	M
CO4	M	M	M	S	M
CO5	M	M	M	S	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. N. Ezhilarasi Dr. B. Ramakrishnan Dr. G.Srinivas Dr. P.Kannan Dr. G.Sivasubramanian (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 8 PHYSIOLOGY OF WILDLIFE				
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 5	Skill Development

COURSE OBJECTIVES

1. To study about the adaptation of animals in various environments.
2. To acquire knowledge on the osmo and thermo regulatory mechanisms.
3. Understand the respiratory organs, structure and functions.
4. To understand the excretory physiology and the role of hormones in the biological activities such as gestation and lactation
5. To acquire knowledge on the neural and muscular physiology.

COURSE OUTCOMES

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

K5 to K1	CO1	Acquire the knowledge on the concepts of adaptation, homeostasis and organisms surviving in various environments
	CO2	Learn about mechanism of thermo and osmoregulation, osmoregulation in aquatic and terrestrial environment and the importance of physiological activities
	CO3	Understand the respiratory organs, function and transportation of respiratory gases
	CO4	Gain knowledge on excretory organs, mechanism, adaptation, excretory products, endocrine glands, role of reproductive hormones, gamete formation, fertilization, embryonic development, parturition and lactation
	CO5	Understand about the neuron structure and types, nerve impulse transmission, neuro degenerative diseases, muscular physiology and muscle contraction

SYLLABUS

UNIT I

(18 HOURS)

ADAPTATION AND HOMEOSTASIS: 1) Adaptation - Levels and Mechanism of adaptation - Significance of body size – Adaptation, acclimation and acclimatization - Concepts of homeostasis. Physiological adaptations of different environments: Marine - Shores and Estuaries – Freshwater - Extreme aquatic environments -Terrestrial life. Extreme terrestrial environments - Parasitic habitats. Stress Physiology – Basic concept of environmental stress and strain; concept of elastic and plastic strain; stress resistance, stress avoidance and stress tolerance.

UNIT II

(18 HOURS)

MECHANISM OF THERMO AND OSMOREGULATIONS: Physiological mechanism of thermo regulation. Physiological adaptation to osmotic and ionic stress; mechanism of cell volume regulation. Osmoregulation in aquatic and terrestrial environments. Physiological response to oxygen deficient stress.

UNIT III

(18 HOURS)

RESPIRATORY PHYSIOLOGY: Introduction to respiratory physiology– Respiratory organs-Structure and function. Respiratory gases–uptake – respiratory pigments – O₂ & CO₂ dissociation curves – transport of respiratory gases. Meditation & Yoga*.

UNIT IV

(18 HOURS)

EXCRETORY PHYSIOLOGY AND ENDOCRINOLOGY: Excretory physiology –Excretory organs– mechanism of excretion– physiology – adaptations of excretion to environment – Excretory products: synthesis and elimination. Endocrine glands – Feedback regulation–Pituitary–gonadal axis. Role of reproductive hormones –gamete formation – fertilization-embryonic development – parturition – lactation-neuroendocrine regulation. (Carnivore, Herbivores both ruminant and non-ruminant).

UNIT V

(18 HOURS)

NEURAL AND MUSCULAR PHYSIOLOGY: Neural physiology –Neurons structure and types. Nerve impulse transmission - resting and action potential — neuro transmitters – mechanism of neural transmission. Neuro-degenerative diseases. Muscular physiology- Types of muscle, contraction–theories – molecular mechanism of muscle contraction.

*: Self study

TEXT BOOKS

1. Verma, P. S., Tyagi, B. S., & Agarwal, V. K. (2000). Animal physiology. S. Chand Publishing.
2. Arora, M. P. (2023). Animal physiology. Himalaya Publishing House. Mumbai 823.
3. Eckert and Randall (2005) Animal Physiology Mechanisms and Adaptations. CBS publishers. (second edition) New Delhi. 830P
4. Rastogi, S.C. (2019). Essentials of Animal Physiology
5. Moyes C, D and P.M Schulte (2013) Principles of Animal Physiology
6. Chatterjee Animal Physiology Vol I & II

REFERENCES

1. Withers, P., & Withers, P. C. (1992). Comparative animal physiology.
2. Schmidt-Nielsen, K. (1997). Animal physiology: adaptation and environment. 5th edition.
3. Wang (eds) (1989). Advances in Comparative and Environmental Physiology: Animal Adaptation to Cold.
4. Gilles(eds) (1988) Advances in Comparative and Environmental Physiology
5. Arumugam, N and A Mariakuttikan (2019). Animal Physiology
6. Arora, M.P. (2018). Animal Physiology for B.Sc. and M.Sc.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. <https://swayam.gov.in/>
2. <https://www.mooc.org/>
3. <https://nptel.ac.in/>

Mapping

PSO/ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	M
CO2	S	S	M	L	M
CO3	H	S	M	L	M
CO4	M	S	S	M	H
CO5	M	S	L	M	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. P.Kannan Dr. N. Ezhilarasi Dr. G.Srinivas Mr. R. Marimuthu (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27			M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 9					
MANAGEMENT OF ZOOLOGICAL PARKS, SANCTUARIES AND NATIONAL PARKS					
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 5	Employable	

COURSE OBJECTIVES

1. To know the Sanctuaries, National Parks, Biosphere Reserves and Wildlife Projects.
2. To know the captive animal breeding and management.
3. To gain knowledge about habitat restoration, corridor management, introduction and reintroduction of species.
4. Techniques of tranquilization and translocation of animals, wildlife diseases

COURSE OUTCOMES

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

K3 to K5	CO1	To know the concepts, formation and management of the Wildlife Sanctuaries
	CO2	To know the concepts, formation and management of Biosphere Reserves the National Parks and Wildlife Projects
	CO3	To understand the definition, aim, formation and management of the Zoos
	CO4	To gain knowledge on habitat restoration, corridor management, exotic and invasive species, introduction and reintroduction of species
	CO5	To understand the diseases of wild animals, tranquilization and transportation of problematic animals

SYLLABUS

UNIT 1

(18 HOURS)

WILDLIFE SANTUARIES: 1) Definition, formation, management and administration. 2) Point Calimere WLS, 3) Vedanthangal BS. 4) Vellode BS, 5) Nellai WLS, 6) Uthayamarthandapuram BS 7) Thanthai Periyar WLS, 8) Koundinya WLS 9) Sri Venkateswara WLS, 10) Cauvery WLS.

UNIT II

(18 HOURS)

NATIONAL PARKS AND TIGER RESERVES: 1) National Parks' definition, formation, management and administration: Guindy NP, Kuno NP, Silent Valley NP 2) Marine National Parks: Gulf of Mannar, 3) Tiger Reserves' definition, formation, management and administration: Mudumalai Tiger Reserve, Sathyamangalam Tiger Reserve, Periyar Tiger Reserve, Bandipur Tiger Reserve, Corbett Tiger Reserve 4) Wildlife Projects: Dugong and Nilgiri Tahr.

UNIT III

(18 HOURS)

FORMATION AND POLICIES OF ZOOLOGICAL PARKS: 1) Definition, Aims of Zoos, Formation and Management of Zoos and Zoological Parks, 2) Central Zoo Authority of India: National Zoo Policy 1998, Recognition of Zoo Rules 1992, Guidelines for Management of Zoos 3) Enclosures: Designing, Engineering and Enrichment. 4) Zoo animal nutrition: Food and feeding management. 5) Zoo sanitation: Principles and Management of Zoo. 6) Zoo veterinary services.

26PWB309

UNIT IV

(18 HOURS)

MANAGEMENT OF ZOOLOGICAL PARKS: 1) Animal restraint: Principles and Methods, release of restrained animals. 2) Techniques of tranquilization, 3) Rescue and treatment, Transportation of animals 4) Zoo education, 5) Captive breeding: Aims, Principles, methods and case studies 6) World Association of Zoos and Aquariums (WAZA), Conservation Planning Specialist Group (CPSG)-IUCN-SSG.

UNIT V

(18 HOURS)

SPECIES CONSERVATION: 1. Conservation breeding, Identifying the key species, 2) Assessment of carrying capacity of habitat, 3) Exotic and Invasive Species: Problems and removal - Case Studies. 4) Introduction and re-introduction of endangered species Case Studies: Tiger, Rhinoceros, Red panda Cheetah and Vulture 5) Pests and Parasites 6) Infectious (Viral, bacterial, fungal diseases) and non-infectious (colon impaction, cancer, respiratory diseases, auto immune disease) & nutritional disorders.

*: Self study

TEXT BOOKS

1. Saharia, V.B. (1982) Wildlife in India, Nataraj Publishers, Dehra Dun.
2. Seshadri, B (1986) India's Wildlife reserves, Sterling Pub's Pvt. Ltd., New Delhi
3. Hosey and Melfe (2013) Zoo Animals: Behaviour, Management and welfare

REFERENCES

1. Kleiman, D. G., Thompson, K. V., & Baer, C. K. (Eds.). (2010). Wild mammals in captivity: principles and techniques for zoo management. University of Chicago Press.
2. Cheeran.J.V. (2007) Textbook of Wild and Zoo Animals: Care and Management. Enlarged Edition.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. <https://swayam.gov.in/>
2. <https://www.mooc.org/>
3. <https://nptel.ac.in/>
4. [Home || Ministry of Environment, Forest and Climate Change](#)
5. [Central Zoo Authority](#)

Mapping

PSO/ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	S	S	M
CO2	M	M	S	S	M
CO3	S	H	S	S	H
CO4	H	M	S	S	H
CO5	S	H	S	M	H

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Mr. R. Marimuthu Dr. G.Sivasubramanian Dr. B. Ramakrishnan Dr. P.Kannan Dr. G.Srinivas Dr. N. Ezhilarasi (Dr. G.Sivasubramanian) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Paper 10 – WILDLIFE MANAGEMENT TECHNIQUES				
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 5	Employable

COURSE OBJECTIVES

1. To make understand the applications and basic wildlife equipments.
2. To acquire the knowledge of GPS and mapping techniques
3. To sensitize the students on wildlife population estimation techniques.
4. To understand the survey and mapping of water resources and conservation.
5. To acquire knowledge on dealing problematic animals

COURSE OUTCOMES

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

K5 to K1	CO1	Acquire the knowledge on uses of various field equipments
	CO2	Gain the mechanism of GPS, GIS and Remote sensing
	CO3	Learn the wildlife population estimation methods and tools used in estimation
	CO4	Know the survey and mapping of water resources, wildlife conflicts, wildlife damage control, anti-poaching operations
	CO5	Identifying problematic animals, radio collaring methods, translocation and monitoring

SYLLABUS

UNIT I (18 HOURS)

EQUIPMENT USED IN WILDLIFE: 1) Making observations and records, field notes & datasheets, 2) Planning wildlife management 3) Investigations and projects, funding agencies. 4) Wildlife Photography: types of cameras & binoculars - camera trap – 5) Altimeter, pedometer, field compass. 6) Sound recording & Media players - activity recording, weight measurement. 7) Drone and Artificial Intelligence.

UNIT II (18 HOURS)

ANIMALS TRACKING: 1) Radio isotopes - radio collaring – GPS – GIS & Remote sensing. 2) Q GIS – Map Info –Arc view (outlines only). 3) Molecular methods in Wildlife; 4) Habitat manipulation: food, water and shade improvement. 5) Use of GIS and Remote sensing in Wildlife.

UNIT III (18 HOURS)

POPULATION ESTIMATION: 1) Planning census, sample counts, Block counts – Road side counts – Dung count – Pugmark & Waterhole census, 2) Identifying animals based on indirect signs 3) Capture recapture techniques 4) tiger, co-predator monitoring census methods. 5) Distance software, Creation of capture matrix and softwares used in wildlife sciences.

UNIT IV (18 HOURS)

FOREST CONSERVATION: 1) Survey and mapping water sources* 2) rain gauge setting, supplementary water source, providing access to natural & artificial water sources, 3) Fire as a tool. 4) Wildlife damage control, assessment methods, reasons for conflicts, trench fences, trenches & other methods 5) Anthropogenic pressure, Trail survey in boundary, Antipoaching operations 6) Ecotourism and Ecodevelopment.

26PWB310

UNIT V

(18 HOURS)

RESCUE AND REHABILITATION OF PROBLEMATIC ANIMALS: 1) Identification of problematic individuals. 2) Capturing methods. 3) Translocation. 4) Release of problematic animals. 5) Captive management. 6) Monitoring activities.

*: Self study

TEXT BOOKS

1. Giles RH Jr. (ed.),1984. Wildlife Management Techniques, 3rd ed. The Wildlife Society, Washington D.C., Nataraj Publishers, Dehra Dun.
2. Agarwala V P, 1980. Forests in India. Oxford and IBH Publishing Co., New Delhi.
3. Puri G S, Meher V M, Gupta R K and Puri S, 1981. *Forest Ecology*. Oxford and IBH Publishing Co., New York.
4. Stebbin E P, 1977. A Manual of Elementary Forest Zoology for India. International Book Distributors, Dehra Dun.
5. Tiwari K M and Singh R V, 1980. Social Forestry Plantations. Oxford and IBH Publishing Co., New Delhi.
6. Manikandan K & Prabhu S. (2019). Indian Forestry A Breakthrough Approach to Forest Service. Jain Brother Publishers.
- 7.

REFERENCES

1. Vasanthraj David. B & Ramamurthy V.V. (2016). Elements of Economic Entomology. Brillion Publishing Warning R H and Schlesinger W H, 1985. Forest Ecosystems: Concepts and Management. Academic Press, New York.
2. Imms A D, 1965. A General Textbook of Entomology, ELBS, London.
3. Metcalfe C L and Flint W P, 1973. Destructive and Useful Insects, McGraw-Hill, New York.
4. Nair, K. S. 2007. Tropical forest insect pests: ecology, impact, and management. Cambridge University Press.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. <https://swayam.gov.in/>
2. <https://www.mooc.org/>
3. <https://nptel.ac.in/>
4. [Home || Ministry of Environment, Forest and Climate Change](#)
5. [Central Zoo Authority](#)
6. [National Tiger Conservation Authority](#)
7. [Home || Project Elephant \(PE\)](#)

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	L	S	L	S
CO2	S	L	S	M	S
CO3	S	H	S	S	S
CO4	S	M	S	S	H
CO5	H	M	S	M	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Mr. R. Marimuthu Dr. G.Srinivas Dr. P.Kannan Dr. G.Sivasubramanian Dr. N. Ezhilarasi (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the Practical: Core Practical 4 PHYSIOLOGY OF WILDLIFE AND MANAGEMENT OF ZOOLOGICAL PARKS, SANCTUARIES & NATIONAL PARKS				
Batch 2026-2027	Hours / Week 2	Total Hours 30	Credits 5	Skill Development

COURSE OBJECTIVES

1. To understand the physiology of wild animals
2. To assess the impact of parasites
3. To understand the various Protected Areas (PAs)
4. To know the feed preparation for zoo and tamed animals
5. Restraining animals using drugs and equipment

COURSE OUTCOMES

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

K1 to K5	CO1	Gain the knowledge on the physiology of wild animals
	CO2	Gain the knowledge on the ectoparasites and endoparasites
	CO3	Obtain knowledge on Management of Zoological Parks
	CO4	Gain knowledge on tranquilization of wild animals
	CO5	Gain knowledge on the demarcation of Wildlife Sanctuaries and National Parks and Biodiversity Hotspots in India

SYLLABUS

Major:

1. Identification of endoparasites and ectoparasites of wildlife
2. Effects of salinity on oxygen consumption of fishes and plot on graph.
3. Marking major National Parks and Wildlife Sanctuaries of Tamil Nadu
4. Marking major and Tiger Reserves of India
5. Marking Biodiversity Hotspots and Biosphere Reserves of India

Minor:

1. Analysis of ammonia, urea and uric acid from excretory product of animals.
2. Determination of LD-50 and LC-50.
3. Designing of animal cages (animal enclosures, moat/ Island)
4. Restraining of animals using drugs and equipments

SPOTTERS

1. pH meter
2. Centrifuge
3. Spectrophotometer
4. Sphygmomanometer
5. ECG Recorded strip
6. X-ray machine
7. Thermo meter
8. Stop watch
9. Mist net
10. Vernier Caliper

SUBMISSIONS

1. Report on the field trips
2. Bonafide Record

TEXT BOOKS

1. Verma, P. S., Tyagi, B. S., & Agarwal, V. K. (2000). *Animal physiology*. S. Chand Publishing.
2. Rastogi, S.C. (2019). *Animal Physiology*
3. Moyes, C.D and P.M Schulte (2013) *Principles of Animal Physiology* Saharia, V.B. (1982) *Wildlife in India*, Nataraj Publishers, Dehra Dun.
4. Seshadri, B.(1986) *India's Wildlife reserves*, Sterling Publisher Pvt. Ltd., New Delhi
5. Hosey and Melfe (2013) *Zoo Animals: Behaviour, Management and welfare*

REFERENCES

1. Withers, P., & Withers, P. C. (1992). *Comparative animal physiology*.
2. Schmidt-Nielsen, K. (1997). *Animal physiology: adaptation and environment*. 5th edition.
3. Wang (eds) (1989). *Advances in Comparative and Environmental Physiology: Animal Adaptation to Cold*.
4. Gilles(eds) 1988 *Advances in Comparative and Environmental Physiology*
5. Arumugam, N and A Mariakuttikan. (2019). *Animal Physiology*
6. Arora, M.P. (2018). *Animal Physiology for B.Sc. and M.Sc.*
7. Cheeran.J.V. (2007) *Textbook of Wild and Zoo Animals: Care and Management*. Enlarged Edition.
8. Kleiman et al, (2010) *Wild Mammals in Captivity; Principles and Techniques for Zoo Management*., University of Chicago Press.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

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2. [Home || Ministry of Environment, Forest and Climate Change](#)

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	M	S
CO2	S	H	H	M	S
CO3	S	H	H	M	S
CO4	S	H	H	M	S
CO5	S	H	H	M	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. G.Sivasubramanian Dr. N. Ezhilarasi Dr. P.Kannan Dr. G.Srinivas (Dr. G.Sivasubramanian) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Core Practical 5 –WILDLIFE MANAGEMENT TECHNIQUES				
Batch 2026-2027	Hours / Week 2	Total Hours 30	Credits 3	Employable

COURSE OBJECTIVES

1. To make understand the applications and basic wildlife equipments.
2. To acquire the knowledge on handling the equipment related to wildlife.
3. To learn GIS and Remote sensing uses and its applications on wildlife management.
4. To sensitize the students on wildlife population estimation techniques.
5. To know the monitoring of tigers and their habitats.

COURSE OUTCOME

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

K3 to K5	CO1	Acquire the knowledge in wildlife and equipments usage in the field
	CO2	Learn the significance of various field equipments
	CO3	Appreciate the mechanism of GIS, Remote sensing and Radio Collaring methods in wildlife
	CO4	Evaluate various types of population estimation, mapping techniques and wild animals health monitoring and postmortem techniques
	CO5	Understand the monitoring methods of wildlife

SYLLABUS

Major

1. Preparation of Quadrats and estimation of population
2. Laying line transects in an area and estimation of population
3. Point Count for birds
4. Block count / Dung density estimation
5. Identification birds calls and write in detail about the bird species

Minor

1. Forest cover monitoring, map reading and surveying techniques of forest area
2. Marking geo-coordinates using softwares
3. Monitoring Tiger population using M-STrIPES software
4. Usage of drone Cameras in Wildlife management
5. Taxidermy (Demonstration only).

Spotters

1. GPS
2. Altimeter
3. Binoculars
4. Field Compass
5. Range finder
6. Camera Trap
7. Rain gauge
8. Radio collar
9. Dart gun
10. Blow pipe

Submission at the time of Practical Examination

1. Report on the field trips
2. Bonafide Record

TEXT BOOKS

1. Agarwala V P, 1980. Forests in India. Oxford and IBH Publishing Co., New Delhi.
2. Manikandan K & Prabhu S. 2019. Indian Forestry A Breakthrough Approach to Forest Service. Jain Brother Publishers.
3. Puri G S, Meher V M, Gupta R K and Puri S, 1981. *Forest Ecology*. Oxford and IBH Publishing Co., New York.
4. Stebbin E P, 1977. A Manual of Elementary Forest Zoology for India. International Book Distributors, Dehra Dun.

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1. Giles, R.H. Jr. (Ed) 1984. Wildlife Management Techniques 3rd edition. The wildlife Society, Washington. D.C. Nataraj Publishers, Dehradun. India
2. Menon.V. *et al*, 2017. Right of passage: elephant corridors of India, Conservation reference series no. 3, 2nd edition, Wildlife Trust of India, New Delhi
3. Warning R H and Schlesinger W H, 1985. Forest Ecosystems: Concepts and Management. Academic Press, New York.

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	H	H	S
CO2	H	M	H	H	S
CO3	H	S	S	M	S
CO4	H	M	M	S	S
CO5	S	H	H	M	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. G.Sivasubramanian Dr. G.Srinivas Dr. P.Kannan Dr. N. Ezhilarasi Mr. R. Marimuthu (Dr. G.Sivasubramanian) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: PROJECT & VIVA – VOCE				
Batch 2026-2027	Hours / Week 24	Total Hours 360	Credits 8	Skill Development & Employable

COURSE OBJECTIVES

1. To acquire inherent knowledge and exposures on relevant practical problems in various fields.
2. To understand the data interpretation
3. To acquire the knowledge on thesis writing.

COURSE OUTCOMES

On successful completion of the project work, the students will be able to

K1 to K5	CO1	Apply theoretical knowledge in the real field of wildlife research
	CO2	Analyze the importance of tasks in collecting the data
	CO3	Evaluate relationships existing between theories and experiments
	CO4	Provide problem solving skills on selected problems in any disciplines of animal sciences
	CO5	Execute appropriate statistical tools and interpretation of appropriate results

Individual project work will be allotted to each students under the supervision and guidance of the faculty members during IV Semester. Project works will be given based on the various fields of specialization of the supervisors under whom the students are allotted. They are allotted based on the lot system. The fields of specialization include Herpetology, Ornithology, Mammalogy, on ecological and conservation related topics. The students shall do their projects under their supervisors and submit their dissertations at the end of IV Semester. During their Viva-Voce examination, both the Internal and External Examiners shall jointly evaluate the project reports submitted by the students and marks will be awarded on the basis as mentioned below.

Guidelines for the Distribution of Marks:

CIA	Project Review	30	40
	Regularity	10	
ESE	Project Report Present	120	160
	Viva – Voce	40	
Grand Total			200

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	S	S
CO2	S	S	H	S	S
CO3	S	M	S	S	S
CO4	S	M	S	H	S
CO5	S	M	S	S	S

S - Strong

H-High

M - Medium

L-Low

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MAJOR ELECTIVE PAPERS

1. Forestry and Silviculture
2. Ethnobiology
3. Biotechnology and Genetic Engineering
4. Wildlife Crime

Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Major Elective: FORESTRY AND SILVICULTURE				
Batch 2026-2027	Hours / Week 5	Total Hours 75	Credits 5	Skill Development

COURSE OBJECTIVES

1. To explain the core concepts of ecology for a better understanding of the environment.
2. To motivate, identify and solve environmental problems.
3. To create awareness about the improvement and protection of the environment.
4. To make understand the need for conservation of biodiversity and natural resources.
5. To help understand the concepts of exobiology.

COURSE OUTCOMES

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

K5 to K1	CO1	Understand the ecological dynamics and the significance of environmental integrity
	CO2	Recognize various global and regional environmental concerns that affect the biosphere and analyze the impact of human activities on the environment.
	CO3	Appreciate the significance of the conservation of native biodiversity.
	CO4	Scrutinize specific cases of environmental pollution and challenges, and their impacts on ecology.
	CO5	Apply knowledge of chemistry, biology, molecular biology and microbiology to arrive at innovative solutions to environment issues and extra-terrestrial habitats.

SYLLABUS

UNIT I (15 HOURS)

FOREST MANAGEMENT: 1) Forest types in India, identification 2) Establishment of herbaria and arboreta. 3) Agro forestry systems, Social forestry system, Urban forestry system 4) Joint Forest Management and Water shed management 5) Deforestation and Impacts. 6) Forest Inventory.

UNIT II (15 HOURS)

REGENERATION OF FOREST: 1) Natural and artificial regeneration of forests. 2) Nursery and planting techniques. 3) Clear felling, Uniform shelter wood selection, coppice and conversion systems. 4) Silviculture management: mangroves, cold desert & plantations. 5) Tree improvement & Seed Technology: Collection, storage, pre-treatment and germination, establishment and tendings 6) Non-Timber Forest Products (NTFP) *.

UNIT III (15 HOURS)

FOREST MENSURATION: 1) Forest management techniques: Methods of measuring diameter, girth, height and volume of trees, - form-factor- volume estimation of stand sampling methods and sample plots. 2) Yield calculation- forest cover monitoring through remote sensing 3) GIS management and modeling 4) Forest survey and map reading. 5) Wood seasoning and preservation 6) Anatomical structure of wood, defects and abnormalities of wood, timber identification.

UNIT IV (15 HOURS)

FOREST WORKING PLAN AND ACTS: 1) Forest Working Plan: Planning, evaluation, monitoring and forest industries, species conservation programme. 2) Silvicultural systems. 3) Indian Forest Act 1927, 4) Forest Conservation Act (1980); 5) Biodiversity Act 2002, 6) Hill Area Conservation Authority (HACA).

UNIT V (15 HOURS)

SOIL CONSERVATION: 1) Role of Forest in soil Conservation 2) Soil erosion-reclamation - role of microorganisms, 3) Watershed management, forest hydrology, river channel stabilization 4) Avalanche and landslide control, ground water recharge 5) Check dam and Percolation pond, 6) Soil Conservation Act 1951.

*: Self study

TEXT BOOKS

1. Odum E, O. (1996) Fundamentals of Ecology
2. P.S.Verma & V.K.Agarwal (2000) Environmental biology
3. Giles, R.H. Jr. (Ed) 1984. Wildlife Management Techniques 3rd edition. The wildlife Society, Washington. D.C. Nataraj Publishers, Dehradun. India.
4. Manikandan, K. and Prabhu, S. (2019). Indian Forestry A Breakthrough Approach to Forest Service. Jain Brother Publishers.
5. Robinson, Wl. and Eric, G. Bolen, (1984). Wildlife Ecology and Management Mac Millan Publishing Co, New York. Pp 478.
6. Dasmann R F, (1964). Wildlife Biology, John Wiley & Sons, New York, p231

REFERENCES

1. Controlled Ecological Life Support system –NASA conference publication (2378) (e-content)
2. Botkin D.B, and E. A. Keller (2009) Environmental Science: Earth as a Living Planet
3. McKinney, M. L., & Schoch, R. M. (2003). Environmental science: systems and solutions. Jones & Bartlett Learning.
4. Sharma, P.D (2019) Ecology and Environment
5. Turk, J and A. Turk (1984) Environmental Science

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. Primark: A Primer of Conservation Biology
2. Calabrese: Pollutants and High-Risk Groups
3. Controlled Ecological Life Support system –NASA conference publication (2378) (e-content)

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	S	H	S	H
CO2	M	S	M	H	M
CO3	H	H	S	M	H
CO4	S	H	S	H	H
CO5	S	M	S	S	H

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. G.Sivasubramanian Mr. R. Marimuthu Dr. P.Kannan Dr. G.Srinivas Dr. N. Ezhilarasi (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Major Elective: ETHNOBIOLOGY				
Batch 2026-2027	Hours/Week 5	Total Hours 75	Credits 5	Skill Development

COURSE OBJECTIVES

1. To provide the history and concepts of ethnobiology
2. To understand the folk biological classification and nomenclature
3. To impart ethics in ethnobotany, ethnozoology, ethnomycology and ethnoecology
4. To understand the inherent knowledge on traditional system of herbal medicine

COURSE OUTCOMES

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

K1 to K5	CO1	To learn the history and concepts of ethnobiology
	CO2	To know indigenous intellectual property and rights
	CO3	To learn ethnobotany and ethnozoology,
	CO4	To learn ethnomycology and ethnoecology
	CO5	To understand the inherent knowledge on traditional system of medicine

SYLLABUS

UNIT I:

(15 HOURS)

Ethnobiology: 1) Overview of a growing field-definition of a field, an interdisciplinary field, local biology as science, ethnobiology spreads out, ethnobiology goes international, traditional ecological knowledge and its sorrows, moving toward more local participation, interfacing with political ecology, ethnobiology as future, History of Ethnobiology: the beginning, ethnobotany, ethnozoology, stages of ethnobiology, stage 1. ethnoecology, stage 2. Traditional ecological knowledge stage 3. Indigenous intellectual property and rights

UNIT II:

(15 HOURS)

Ethics in Ethnobiology: 1) History, International Law and Policy, and Contemporary Issues: Introduction, 2) History of research ethics as related to ethnobiology, International Law and Policy debates and negotiations, key concepts, terms and definitions, 3) United Nations Treaties, (I) Convention on Biological Diversity, (II) World Intellectual Property Organization, International regime on access and benefit sharing, 4) Intergovernmental Committee on Genetic Resources, 5) Traditional knowledge and folklore (IGC), 6) Contemporary issues for ethnobiologists

UNIT III.

(15 HOURS)

Ethnozoology: Definition of Terms and Scope of the field, A brief history of ethnozoological investigations, case studies and theoretical issues, folk biological classification and nomenclature, general principles of classification and nomenclature, “the hunting hypothesis” versus “woman the gatherer”, the dietary role of meat in farming societies, the role of animals among pastoralists, conservation, animals are “good to think”, animism

UNIT IV.

(15 HOURS)

Ethnobotany: The study of people-plant relationships: introduction, the development of ethnobotany, methods in ethnobotany, classic case studies and their contributions to ethnobotanical praxis, intergenerational research in medical ethnobotany, using paleoethnobotany to understand the past, solving the mystery of a notorious illness: ethnobotany and cycad toxicity*.

UNIT V

(15 HOURS)

Ethnomycology: Fungi and mushrooms in cultural entanglements, subjects of the third kingdom, the beginnings and foundational principles of ethnomycology, methods in ethnomycology, the many rewards of the third hunt, mushrooms in art and material culture, all in one: medicine, poison, and food

*: Self study

TEXT BOOKS

1. Anderson, E. N. (2011). *Ethnobiology: overview of a growing field*. Ethnobiology. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Manikandan, K. and Prabhu, S. (2019). *Indian Forestry A Breakthrough Approach to Forest Service*. Jain Brother Publishers.

REFERENCE BOOKS

1. Abbasi, A. M., & Bussmann, R. W. (Eds.). (2021). *Ethnobiology of mountain communities in Asia* (p. 439). Cham, Switzerland, Pp: Springer International Publishing.
2. Albuquerque, U. P., De Medeiros, P. M., & Casas, A. (2015). *Evolutionary ethnobiology*. Springer International Publishing.
3. Walters, B. B., Rönnbäck, P., Kovacs, J. M., Crona, B., Hussain, S. A., Badola, R., & Dahdouh-Guebas, F. (2008). Ethnobiology, socio-economics and management of mangrove forests: A review. *Aquatic Botany*, 89(2), 220-236.

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	S	H	M
CO2	S	M	M	H	M
CO3	S	H	H	M	H
CO4	S	M	H	H	S
CO5	S	H	M	M	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. G.Srinivas Dr. G.Sivasubramanian Dr. B. Ramakrishnan Dr. N. Ezhilarasi Mr. R. Marimuthu Dr. P.Kannan (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Major Elective: BIOTECHNOLOGY AND GENETIC ENGINEERING				
Batch 2026-2027	Hours / Week 5	Total Hours 75	Credits 5	Employable

COURSE OBJECTIVES

1. To make aware of the students about the theories, concepts and basics of Biotechnology.
2. To provide knowledge about tissue culture.
3. To acquire knowledge about molecular methods involved in genetic engineering.

COURSE OUTCOMES

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

K1 to K5	CO1	Understand methodological approach to the study of Biotechnology.
	CO2	Identify contamination and understand preservation
	CO3	Develop an idea, how to arrange sequences of DNA.
	CO4	Understand the Recombinant Techniques.
	CO5	Attain a basic conceptual knowledge of the principle Mechanisms of the genetic and molecular elements that are involved.

SYLLABUS

UNIT I

(15 HOURS)

TISSUE CULTURE AND MEDIA PREPARATION: 1) Introduction to Animal Tissue Culture: Background, Advantages, Limitations and applications. 2) Culture Environment, Essential Equipment's required for animal tissue culture, 3) Aseptic Technique and general safety. 4) Media: Physicochemical properties, Balanced Salt Solutions, Complete media, serum, Advantage and Disadvantages of serum, free media.

UNIT II

(15 HOURS)

PRESERVATION OF CULTURE: 1) Contamination: Source of contamination, Types of Microbial contamination, Monitoring, Eradication of contamination, Cross-contamination. 2) Cryopreservation: Need of cryopreservation, Apoptosis and its determination: cytotoxicity assays. 3) Application of animal cell culture, Vaccine production, 4) Tissue engineering.

UNIT III

(15 HOURS)

RECOMBINANT TECHNIQUES: 1) In vitro Fertilization and Embryo Transfer: Composition of IVF media, steps involved in IVF, 2) Fertilization by means of micro insemination, PZD, ICSI, SUZI, MESA, stem cell culture, embryonic stem cell and their applications. 3) Ethical issues in animal biotechnology*.

UNIT IV

(15 HOURS)

GENE MANIPULATION: 1) Genomic and cDNA libraries; 2) PCR: Principle and types; 3) Site directed mutagenesis; DNA sequencing, Microarrays – cDNA and protein chips. 4) DNA fingerprinting; SNPs, VNTRs and microsatellites, Molecular Marker techniques; RFLP, RAPD, STS, SSR, ISSR, SCAR, SSCP AND AFLP. 5) Importance of molecular markers assisted selection.

UNIT V

(15 HOURS)

ENZYMES INVOLVED IN GENETICAL ENGINEERING: 1) Definition of enzyme, enzymology and enzyme technology, nature of the enzymes. 2) Enzymes used in manipulation; 3) Polymerases and types, nucleases, endonucleases, exonucleases and restriction enzymes; ligases; topoisomerases, methylases. 4) Applications of enzymes. 5) Electrophoresis.

*: Self study

TEXT BOOKS

1. Arumugam, N and V. Kumaresan (2019). Animal Biotechnology Saras Publication.
2. Singh, B. S.K.Goutham. M.S. Chauhan and S.K. Singla (2015) Textbook of Animal Biotechnology, The Energy and Resources Institute, TERI, New Delhi.
3. Yamagami T. (2017) Genetic Engineering A Primer. Auris Publishing
4. Arumugam, N & A Thangamani, L M. (2012) Molecular Biology and Genetic Engineering, Narayanan, Padmalatha Singh. Saras Publication.

REFERENCES

1. Verma, A & A. Singh (2020) Animal Biotechnology., 2nd Edition, Academic Press.
2. Gupta. P. K. (2020) Animal Biotechnology. Rastogi Publications
3. Gardner, E. J. (1972). *Principles of genetics* (No. 4). London, UK, John Wiley & Sons, Inc.
4. Rastogi, S (2009) Genetic Engineering. Oxford University Press,

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. NOC: Introduction to Developmental Biology, Prof. Subramaniam.K, IIT Madras, <https://nptel.ac.in/courses/102/106/102106084/>

Mapping

PSO / CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	S	H	M	L
CO2	M	S	M	M	S
CO3	M	S	H	H	S
CO4	M	M	H	H	S
CO5	M	M	H	H	S

S - Strong

H-High

M - Medium

L-Low

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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the Paper: Major Elective: WILDLIFE CRIME				
Batch 2026-2027	Hours / Week 5	Total Hours 75	Credits 5	Skill Development

COURSE OBJECTIVES

1. To study about the types of wildlife crime like, poaching, illegal wildlife trade, illegal hunting
2. To acquire knowledge on the socio-economic factors that contribute to wildlife crime
3. To study about the effectiveness of existing laws, policies, and enforcement measures
4. To acquire knowledge on the wildlife crime and investigation, intelligence gathering, and organized crime
5. To Understand the impact of wildlife crimes, policy and law enforcement agencies

COURSE OUTCOMES

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

K1	CO1	Acquire the knowledge of various types of wildlife crimes such as poaching, illegal wildlife trade, illegal hunting
	CO2	Learn about how the socioeconomic variables influencing wildlife crime in India
to	CO3	Know the existing laws and policies to conserve the flora and fauna conservation
K5	CO4	Learn about the concept of wildlife crime, investigation of wildlife crime, intelligence gathering, investigation of organized wildlife crimes and networks
	CO5	Understand the impact of wildlife crimes and law enforcement agencies

SYLLABUS

UNIT I

(15 HOURS)

Dimensions and consequences of Wildlife Crime: 1) Poaching: Illegal hunting, killing or capturing of wild animals. 2) Illegal wildlife trade: global issue of ivory, tiger parts, leopard parts, rhino horns, 3) Parts of mammal, reptile, amphibian, bird, fish, butterfly, 4) Parts of coral reef, molluska, red sander, medicinal plants, ornamental plants.

UNIT II

(15 HOURS)

Effectiveness of Existing laws, policies, and Enforcement Authorities: 1) Wildlife (Protection) Act 1972, 2) Foreign Trade (Development and Regulation) Act, 1992, 3) Customs Act 1962, 4) Indian Forest Act 1927, 5) WCCB, DRI, Convention of International Trade in Endangered Species of Wild Flora and Fauna (CITES)*, 6) MIKE-IUCN, TRAFFIC, Interpol.

UNIT III

(15 HOURS)

Socio-Economic Factors that contribute to Wildlife Crime: 1) Socio-economic aspects of wildlife crime issue in India 2) Criminal activities: logging and mining 3) Criminal activities: growing illicit crops. 4) Cultural norms influence wildlife crime like, traditional medicine and animals' parts.

UNIT IV

(15 HOURS)

Wildlife Crime Investigation: 1) Concept of wildlife crime 2) Collection of information and evidence 3) Intelligence network, search and seizure 4) Crime investigation and complaints 4) Investigation of organized crime syndicates and transnational networks.

UNIT V

(15 HOURS)

Wildlife Forensics: 1) Forensic protocols for species identification, molecular markers used in forensics, 2) Species identification: Morphological identification, Molecular identification, 3) Role and functions of WCCB, case studies, 4) Significance of wildlife forensics.

*: Self study

TEXT BOOKS

1. Anon., A Manual on Wildlife Species in Trade, 2011. Wildlife Crime Control Bureau, Ministry of Environment, Forests and Climate Change, Govt. of India
2. Moreto, W.D, 2018. Wildlife Crime from Theory to Practice. Temple University Press
3. Wildlife Crime Investigation “A Hand book for Wildlife Crime Investigation Officers” Wildlife Crime Control Bureau, Government of India (2013). 1st edition
4. Menon,V. and A. Kumar, 1999. Wildlife Crime “An enforcement guide”. Natraj publishers, New Delhi

REFERENCE

1. Chandran, A.R. 2023. Wildlife Crime in India: A multi-faced analysis. ILE Monthly Review, 1 (2) of 2023, Pp.38-45.
2. X-Ray images of wildlife products, (2012). A catalogue of Wildlife Contraband Community Carried in personal Personal Baggage. Wildlife Crime Control Bureau, Government of India.
3. Jota Baptista, C.; Seixas, F. Gonzalo-Orden, J.M.; Oliveira, P.A. Wildlife Forensic Sciences: A Tool to Nature Conservation towards a One Health Approach. Forensic Sci. 2022, 2, 808–817.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. <https://swayam.gov.in/>
2. <https://www.mooc.org/>
3. <https://nptel.ac.in/>
4. <https://doi.org/10.3390/forensicsci2040058>

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	S	H
CO2	S	M	S	S	H
CO3	H	M	S	S	H
CO4	H	M	S	S	H
CO5	H	M	S	S	H

S - Strong

H-High

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L-Low

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NON-MAJOR ELECTIVE PAPERS

1. Research Methodology
2. Biostatistics, Application of computing & Artificial Intelligence 4.0
3. Environmental Science
4. Fundamentals of Information Security

Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Non-Major Elective RESEARCH METHODOLOGY				
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 3	Skill Development

COURSE OBJECTIVES

1. To understand about research.
2. To acquire the knowledge on thesis writing.
3. To learn the methodology about the research work.
4. To understand the data interpretation.
5. To sensitize the students to study about research.

COURSE OUTCOMES

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

K1 to K5	CO1	Acquire the knowledge on research
	CO2	Learn significance of writing literature.
	CO3	Understanding the data interpretation.
	CO4	Evaluate the results of interpreted data.
	CO5	Understand the significance of research.

SYLLABUS

UNIT I (18 HOURS)

BASIC OF RESEARCH: Topic Selection-Planning research–defining objectives–Preparation of work plans. Identification of suitable methodology-Preparation of project proposal–Funding agencies–Student project

UNIT II (18 HOURS)

COLLECTION OF LITERATURE: Collection of literature – News articles– Newsletters–Journals. Digital library and search of articles – Keywords and search – Internet–Google Scholar–Pubmed– Inflibnet–Medline– Agricola–Science direct – Open access Journals – virtual sources – other sources.

UNIT III (18 HOURS)

DATA ANALYSIS: Collection of samples/data–Data analysis–Microsoft Office – Construction of tables–headings Footer – hypothesis testing –Test of Significance– Tabulation–Presentation of results. Mean, Median, Mode, range, standard deviation, student ‘t’ test, Correlation, Regression, One-way Anova.

UNIT IV (18 HOURS)

THESIS STRUCTURE: Thesis structure–Components – Writing Introduction–review of literature–Materials & Methods–Presentation of results – Discussion of Results based on literature–Arrangement of Bibliography and how to quote reference in thesis–Appendix.

UNIT V

(18 HOURS)

PUBLISHING ARTICLES: Publishing of Articles in newspapers/newsletters – Selection of journals–ISSN Number–Peer Reviewed Journals–Science citation index– impact factor and importance. Manuscripts preparation for Journals–components– Submission and Publication*.

*: Self study

TEXT BOOKS

1. Anderson, J., & Poole, M. (2009). Assignment and thesis writing. Juta and Company Ltd.
2. Fisher, R. A. (1970). Statistical methods for research workers. In *Breakthroughs in statistics: Methodology and distribution* (pp. 66-70). New York, NY: Springer New York.
3. Freund, J. E. (1988). Modern elementary statistics. Prentice-Hall, Inc.
4. Paneerselvam, R. (2014). Research methodology. PHI Learning Pvt. Ltd.
5. Sansanwal, D. N (2020) Research Methodology and Applied Statistics, Shipra Publications.
6. Zar, J. H. (1999). Biostatistical analysis. Pearson Education India.

REFERENCES

1. Malter K, (1972) Statistical analysis in Biology, Chapman Hall, London.
2. Rajendrakumar C (2008) Research Methodology SB Nanja for APHA publishing Corporation New Delhi.
3. Kothari S R, (2012) Research Methodology Methods and Techniques, Pragun Publication.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. Research Methodology: https://swayam.gov.in/nd2_cec20_hs17/preview
2. Understanding Research Methods: <https://www.mooc-list.com/course/understanding-research-methods-course-ra>

Mapping

PSO / CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	H	S	S
CO2	M	H	H	S	S
CO3	H	S	S	M	S
CO4	H	M	H	S	S
CO5	H	S	H	S	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. P.Kannan Dr. N. Ezhilarasi Dr. G.Srinivas Mr. R. Marimuthu (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27		M.Sc. WILDLIFE BIOLOGY		
Title of the paper: Non-Major Elective BIOSTATISTICS, APPLICATION OF COMPUTING & ARTIFICIAL INTELLIGENCE 4.0				
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 3	Skill Development

COURSE OBJECTIVES

1. To understand about research.
2. To learn the methodology about the research work.
3. To understand the data interpretation.
4. To sensitize the students to study about research.

COURSE OUTCOMES

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

K1 to K5	CO1	Acquire the knowledge on research
	CO2	Learn significance of data collection
	CO3	Understanding the data interpretation.
	CO4	Evaluate the results of interpreted data.
	CO5	Learn the significance of softwares in research.

Unit 1

(18 HOURS)

DATA COLLECTION AND TABULATION: 1) Primary data collection and secondary data collection. 2) Processing data: classification and tabulation. 3) Organizing of data: individual, discrete and continuous series. 4) Diagrammatic representation of data: line diagram, bar diagram and pie diagram. 5) Graphic representation of data: histogram, frequency polygon, frequency curve and ogive.

Unit: 2

(18 HOURS)

MEASURES OF CENTRAL TENDENCIES AND DEVIATIONS: 1) Mean, Median, Mode. 2) Measures of dispersion: range, standard deviation, variance, standard error, Skewness and kurtosis. 3) Correlation: Types and methods of correlation, correlation coefficient. 4) Regression analysis: Regression lines and equations.

Unit:3

(18 HOURS)

TESTING OF HYPOTHESIS: 1) Null and alternative hypothesis – chi square test, student ‘t’ test, F test (ANOVA) with experimental samples (one way & two way). 2) Probability; Basic Principles - apriori and aposteriori probabilities – addition and multiplication rules of probability - conditional probability.

Unit:4

(18 HOURS)

INTRODUCTION TO COMPUTER: 1) Introduction, Advantages of using computer, Generation of computers, Computer codes - BCD code, ASCII code, Functional units of a computer; 2) Types of computers: Desktop, Laptop, palmtop, PDA etc. 3) Definition: Hardware, Software and Firmware, ROM, RAM, CD-ROM, DVD, Pendrive, Hard disc, LCD projector.

Unit 5:

(18 HOURS)

SOFTWARE PROGRAMS AND TOOLS: 1) MS Word processor, MS Excel for Charts, MS PowerPoint and Multimedia. 2) Viruses and Worms, 3) Software packages in Biostatistics: Applications of MINITAB and SPSS. 4) Communication networking and Computer networking*.

*: Self study

TEXT BOOKS

1. Anderson, J., & Poole, M. (2009). Assignment and thesis writing. Juta and Company Ltd.
2. Fisher, R. A. (1970). Statistical methods for research workers.
3. Freund, J. E. (1988). *Modern elementary statistics*. Prentice-Hall, Inc.
4. Paneerselvam, R. (2014). Research methodology. PHI Learning Pvt. Ltd.
5. Sansanwal, D. N (2020) Research Methodology and Applied Statistics, Shipra Publications.

REFERENCES

1. Mather, K. (1943). Statistical analysis in biology.
2. Rajendrakumar C (2008) Research Methodology SB Nanja for APHA publishing Corporation New Delhi
3. Kothari, C. R. (2004). Research methodology: Methods and techniques. New Age International.
4. Zar, J. H. (1999). Biostatistical analysis. Pearson Education India.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

<https://swayam.gov.in/>

<https://www.mooc.org/>

<https://nptel.ac.in/>

Mapping

PSO/ CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	H	S	S
CO2	M	H	H	S	S
CO3	H	S	S	M	S
CO4	H	M	H	S	S
CO5	H	S	H	S	S

S - Strong

H-High

M - Medium

L-Low

Content prepared by (Based on Inputs) Dr. B. Ramakrishnan Dr. P.Kannan Dr. N. Ezhilarasi Dr. G.Srinivas Mr. R. Marimuthu Dr. G.Sivasubramanian (Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Programme Code: 27	M.Sc. WILDLIFE BIOLOGY			
Title of the paper: Non-Major Elective ENVIRONMENTAL SCIENCE				
Batch 2026-2027	Hours / Week 6	Total Hours 90	Credits 3	Skill Development

COURSE OBJECTIVES

1. To study about the need of environmental conservation
2. To acquire knowledge on the natural resources
3. To study about the ecosystem
4. To acquire knowledge on the biodiversity
5. To Understand the environmental pollution

COURSE OUTCOMES

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

K1 to K5	CO1	Acquire the knowledge of importance of environmental conservation
	CO2	Learn about the role of natural resources
	CO3	Know the importance of ecosystem, forest ecosystem, grassland ecosystem and aquatic ecosystem
	CO4	Understand about the value of biodiversity, hotspots of biodiversity conservation of biodiversity
	CO5	Learn about various types of the environmental pollution

SYLLABUS

UNIT I (18 HOURS)

The Environment – Introduction: 1) Multi-disciplinary nature of environmental studies. 2) Importance of environmental studies and public awareness. 3) Components of environment, atmosphere, hydrosphere, lithosphere. 4) Modification of earth's environment by the biosphere.

UNIT II (18 HOURS)

Natural Resources: 1) Forest resources, 1) Dams, 2) Water Resources, 3) Food Resources, 4) Energy Resources And 5) Land Resources*.

UNIT III (18 Hours)

Ecology: 1) Ecosystem, 2) Biome and ecosystem, 3) Energy flow through ecosystem, 4) Food chain and webs, ecological pyramids, biomagnification, 5) Forest ecosystem, grassland ecosystems and aquatic ecosystems.

UNIT IV (18 Hours)

Biodiversity and its Conservation: 1) Introduction, definition, species and ecosystem diversity. 2) Biogeographical classification of India. 3) Biodiversity at global, national and local levels. 4) Hotspots of biodiversity. 5) Threats to biodiversity.

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(Dr.G.Srinivas) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD

Programme Code:		For PG Degree students		
Non-Major Elective Paper – Fundamentals of Information Security				
Batch 2026-2027	Hours/ Week 6	Total Hours 90	Credits 3	Employability / Skill Development

Course Objectives

1. To introduce the fundamentals of Information Security systems.
2. To appraise on the concepts of Cryptography and security systems.
3. To explore the nuances of vulnerable systems and their preventive methods.
4. To sensitize the students on the current Cyber laws.

Course Outcomes (CO)

After Completion of the Course the student will be able to

K1 to K5	CO1	Comprehend the issues pertaining to Security at workplace.
	CO2	Establish methods of protecting data and data sets from attacks.
	CO3	Introduce a robust data compliance model.
	CO4	Adopt novel methods of data/information protection through policies.
	CO5	Implement and appraise the existing Cyber Laws to appropriate Stakeholders.

Syllabus

UNIT I (18 Hours)

Information Security basics: Definition of Information Security - History of Information Security - Characteristics of Information Security - Components of Information Security -Types of Security - Security System Development Life Cycle (SDLC) - Threats, Vulnerabilities, and Risks - Types of Cyber Attacks. Information Security for technical administrators: Types of Servers (Web, Database, Application) - Server Hardening Techniques- Server Security – Network security- Social Media Security -Secure Software Development Practices- Security Testing and Evaluation

UNIT II (18 Hours)

Cryptography: Basic concepts - plain text - Cipher text -Types of Cryptography - Substitution and Transposition Techniques - Classical Ciphers- Encryption Principles – CRYPT Analysis - Cryptographic Algorithms - Cryptographic Tools – Authentication -Biometrics* -passwords - Access Control Devices - Physical Security - Security and Personnel- Cryptanalysis. Language-based Security: Analysis of code for security errors, Safe language and sandboxing techniques- Language-Based Access Control - Modern Cryptography Trends- Secure Communication- Privacy & Data Protection.

UNIT III (18 Hours)

Firewalls, Viruses, Worms Digital Rights Management: Viruses and Worms- Worms - Digital Rights Management – Firewalls - Application and Circuit Proxies - Stateful Inspection - Design Principles of Firewalls - Malware Concepts- Ransomware Attacks- Intrusion Detection and Prevention Systems (IDS/IPS)- Virtual Private Networks (VPNs)- Security Policies and Standards. Logical Design: Access Control Devices- Physical Security- Security and Personnel - NIST Models-VISA International Security Model- Design of Security Architecture-Planning for Continuity- Identity and Access Management (IAM) - Risk Management in Security Design- Security Monitoring and Logging- Compliance and Governance

**26PGI4N2
(18 Hours)**

UNIT IV

Hacking: Introduction – Hacker Hierarchy – Password cracking – Phishing - Network Hacking - Wireless Hacking - Windows Hacking - Web Hacking*- Ethical Hacking - Foot printing and Reconnaissance - Vulnerability Assessment- Exploitation Techniques - Malware Analysis- Social Engineering. Security Investigation: Need for Security- Business Needs-Threats- Attacks- IP Addressing and Routing – Social Media - Digital Forensics- Log Analysis and Monitoring- Vulnerability Assessment and Penetration Testing- Cyber Laws and Ethics- Email and Communication Security- Mobile and Endpoint Security.

UNIT V

(18 Hours)

Cyber Laws: What is Cyber Law? - Need for Cyber laws - Common Cyber Crimes and Applicable Legal Provisions: A Snapshot - Cyber Law (IT Law) in India – The Information Technology Act of India 2000 - Cyber Law and Punishments in India -Cyber Crime Prevention guide to users – Regulatory Authorities- Data Protection and Privacy Laws- Intellectual Property Rights (IPR) in Cyberspace- Electronic Contracts (E-Contracts)- International Cyber Laws- E-Commerce and Legal Issues- Emerging Trends in Cyber Law.

*Self-study and questions for examinations may be taken from the self-study portions also.

Work Book:

1. Fundamentals of Information Security – prepared by Kongunadu Arts and Science College, Coimbatore -29.

Reference Books:

1. Charles P Pfleeger and Shai Lawrence P fleeger, “Security in Computing”, Fourth & Third Edition, Prentice Hall, 2007 & 2011.
2. Ross J. Anderson and Ross Anderson, “Security Engineering: A guide to building Dependable Distributed System”, Wiley,2009.
3. Thomas R. Peltier, Justin Peltier and John Bleckley, “Information Security Fundamentals”,2nd Edition, Prentice Hall 1996.
4. Gettier, Urs E. Information Security: Strategies for Understanding and Reducing Risks John Wiley & Sons, 2011.
5. “Principles of information security”. Michael Whiteman and Herbert J. Mattord,2012.
6. Information security -Marie wright and John kakalik,2007.
7. Information security Fundamentals- Thomas R. Peltier, Justin Peltier and John Blackle 2005.
8. Information Security theory and practical PHI publication, Dhiren R. Patel-2008.
9. Debby Russell and Sr.G.T. Gangemi,” computer Security Basics,2nd edition, O’Reilly Media,2006.
10. Mark Stamp’s Information Security Principles and practice, deven N.shah ,Wiley , India 2013.
11. Information Security, A Practical Approach, S.M. Bhaskar, S.I. Ahson, Narosa Publications, 2008

MAPPING

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	L	M	H
CO2	M	S	M	H	H
CO3	L	S	S	H	H
CO4	M	H	H	S	H
CO5	S	M	L	M	H

S–Strong H–High M–Medium L–Low

Content prepared by (Based on Inputs) Dr. L. Kathirvelkumaran Dr. R. Saravana Moorthy (Dr. G.Sivasubramanian) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Question paper pattern

Duration: 3 Hours

Max.: 75 Marks

Section – A (10X1=10)
Choose the correct answer

Section – A (5X5=25)
Short answer questions, either or type, one question from each unit

Section – C (5X8=40)
Essay answer questions, either or type, one question from each unit

CIA EXAMINATION BREAK UP OF MARKS

S. NO	DISTRIBUTION COMPONENT	MARKS
1.	CIA I – 75 Marks Converted to 30	30
2.	CIA II – 75 Marks Converted to 30	30
3.	Assignment I	10
4.	Assignment II	10
5.	Attendance	05
6.	Any Case Study related to Information Security	15
Total		100

25PWB3X1

Programme Code: 27		All PG Programme		
Extra Departmental Course (EDC) – WILDLIFE CONSERVATION				
Batch 2026-2027	Hours / Week 2	Total Hours 30	Credits 2	Skill Development

COURSE OBJECTIVES

- To learn about the distribution of wild animals in India.
- To study about importance of wildlife and its ecosystem.
- To acquire knowledge on wildlife crime and threats to wildlife.

COURSE OUTCOMES

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

K1 to K5	CO1	Understand the distribution of wild animal species across India
	CO2	Know the importance of wildlife and their role in forest ecosystem
	CO3	Develop the knowledge on why to conserve wild animals
	CO4	Analyze the knowledge on various wildlife crime and illegal wildlife trade in India
	CO5	Evaluate various threats to wildlife

SYLLABUS

UNIT I (6 HOURS)

Ecology, distribution and status: 1) Terrestrial birds, 2) Aquatic birds. 3) Special features of raptors, 4) Ecology of vultures and its importance in the forest ecosystem. 5) Importance of insectivores birds 6) Importance of frugivores birds.

UNIT II (6 HOURS)

Ecology, distribution and status: 1) Feeding habits of herbivores, carnivores, omnivores. 2) Status and distribution of elephant, gaur, tiger, lion, Nilgiri tahr, Himalayan tahr, wild boar, hyena, wild dog, lion-tailed macaque and rhinoceros in India. 3) Introduction to Indian smaller mammals.

UNIT III (6 HOURS)

Human-wildlife conflict management: 1) Address the human-wildlife conflicts. 2) Conflict and mitigation methods. 3) Reason behind the human-wildlife conflicts. 4) Radio collaring and translocation of elephants.

UNIT IV (6 HOURS)

Wildlife crime: 1) Poaching, killing or capturing of wild animals. 2) Illegal wildlife trade, 3) Illegal ivory trade, 4) Illegal trade of tiger parts 5) Illegal trade of rhino horns*, 6) Lethal techniques for hunting wild animals.

25PWB3X1

UNIT V

(6 HOURS)

LEGISLATION AND ORGANIZATIONS INVOLVING IN WILDLIFE

CONSERVATION: 1) Wildlife (Protection) Act 1972, 2) Indian Forest Act 1927, 3) Biodiversity Act, 2002, 4) HACA, 5) WCCB, 6) IUCN.

*: Self study

Teaching Methods

Smart Class Room/PowerPoint presentation/Seminar/Quiz/Discussion

TEXTBOOKS

1. Prater, S. H. (1997). The book of Indian mammals. Bombay Natural History Society.
2. Menon, V. (2023). Indian mammals: a field guide. Hachette India.
3. Attenborough, D. (2002). The life of mammals (Vol. 2). Random House.
4. Wildlife Crime Investigation “A Hand book for Wildlife Crime Investigation Officers” Wildlife Crime Control Bureau, Government of India (2013). 1st edition
5. Menon, V. and A. Kumar, 1999. Wildlife Crime “An enforcement guide”. Natraj publishers, New Delhi
6. Salim Ali, (2003) The Book of Indian Birds. BNHS. Mumbai
7. Grimmett, R., Inskipp, C., & Inskipp, T. (2016). Birds of the Indian subcontinent. Chistopher helm, London.

REFERENCES

1. Chandran, A.R. (2023). Wildlife Crime in India: A multi-faced analysis. ILE Monthly Review, 1 (2) of 2023, Pg.38-45.
2. X-Ray images of wildlife products, (2012). A catalogue of Wildlife Contraband Community Carried in personal Baggage. Wildlife Crime Control Bureau, Government of India.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1. [IUCN Red List of Threatened Species](#)
2. [Central Zoo Authority](#)
3. [Home || Ministry of Environment, Forest and Climate Change](#)

Content prepared by (Based on Inputs) Dr. G.Sivasubramanian Dr. P.Kannan Dr. B. Ramakrishnan Dr. G.Srinivas Dr. N. Ezhilarasi Mr. R. Marimuthu (Dr. G.Sivasubramanian) Signature of the Course in-charge	(Dr. G.Sivasubramanian) Signature of the HoD
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Question paper pattern

Duration: 3 Hours

Max.: 75 Marks

Section – A (10X1=10)
Choose the correct answer

Section – A (5X5=25)
Short answer questions, either or type, one question from each unit

Section – C (5X8=40)
Essay answer questions, either or type, one question from each unit

CIA EXAMINATION BREAK UP OF MARKS

(For theory only)

S. No	DISTRIBUTION COMPONENT	MARKS
1.	CIA I – 75 Marks Converted to 40	40
2.	CIA II – 75 Marks Converted to 40	40
3.	Assignment I	05
4.	Assignment II	05
5.	Attendance	05
6.	Others (Seminar, Group Discussion, Flipped Class room, etc.,)	05
Total		100