KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029

DEPARTMENT OF BOTANY
PG DIPLOMA PROGRAMME IN BIODIVERSITY

CURRICULUM AND SCHEME OF EXAMINATIONS

(CBCS)

(2024 – 2025 onwards)

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

PROGRAMME OUTCOMES (PO)

PO 1

- The programme gives insight knowledge into the area of biodiversity with scientific information. It creates interest among the students towards nature and its protection of biodiversity heritage.

PO2

- Understanding the principles and concepts of biodiversity is the most needed for all the sections of people. This programme helps to improve the production as well as the betterment of man's holistic development and welfare.

PO3

- The programme is aimed to know the structure of biodiversity, its functional role, services and possible management practices to be followed according to the locality and region. Students will be able to acquire vast knowledge in the field of biodiversity.

PO4

- This programme will be helpful to realize the serious consequences of climate change and its impact on environment, resources, health and economy.The action plan formulated at national and international levels to manage the biodiversity will also be known.

PO5

- Students will able to know the technological approach to conserve the species of both flora and fauna.

PO6

- Students can able to equip the knowledge acquired through this programme to solve problems related to biodiversity services and conservation.

PO7

- Students can learn the values and ethics of wildlife conservation and to know the policies and laws employed in biodiversity management.

PO8

- Students can learn the techniques for biotic community and ecosystem analysis and get knowledge about ecosystem in selected communities/protected areas.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1

- Students will learn about the measures and compare the levels of biodiversity between the areas and realize current threats to biodiversity.

PSO2

- Students will be able to understand the role and principles of operation of different types of protected areas.

PSO3

- Students will acquire knowledge on the opportunities and challenges in community based conservation and evaluate conservation trade-offs between competing interests.

PSO4

- Students will be aware of the relevant legislation and recent initiatives taken for ecosystem management.

PSO5

- Students will be able to analyze the range of options for biodiversity conservation which can be employed according to conditions prevailed.

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

Programme Name: PG Diploma Programme in Biodiversity

Curriculum and scheme of Examination under CBCS
(Applicable to the students admitted during the Academic Year 2024-2025and onwards)

Semester	Subject Code	Title of the Paper	Instruction hours /cycle	Exam Marks			Duration of Exam (hours)	Credits
				CIA	ESE	Total		
I	24PDB101	C.P.1. Introduction to Biodiversity	2	25	75	100	3	2
	24PDB102	C.P.2. Values, Uses and Loss of Biodiversity	2	25	75	100	3	2
	24PDB103	C.P.3. Conservation and Management of Biodiversity	2	25	75	100	3	2
	24PDB1CL	C.Pr.1. Biodiversity - I	2	40	60	100	3	2
		Total	8			400		8
II	24PDB204	C.P.4. Biodiversity Prospecting and Indigenous Knowledge System (IKS) and Biotechnology for Biodiversity	2	25	75	100	3	2
	24PDB205	C.P.5. Wildlife Biology and Conservation Policies and Law	2	25	75	100	3	2
	24PDB2CM	C.Pr.2. Biodiversity - II	2	40	60	100	3	2
	24PDB2Z1	Project & Viva-Voce	2	20	80	100	-	2
		Total	8			400		8
		Grand Total	16			800		16

Note:

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

Tally Table

S. No.	Subject	No. of Subjects	Total Marks	Credits
1.	Core – Theory	05	500	10
2.	Core Practical	02	200	4
3.	Project	01	100	2
	Grand Total	08	800	16

- 25% CIA is applicable for all subjects
- A **Field Trip** preferably relevant to the course should be undertaken during the course

Components of Continuous Internal Assessment

Components		Marks	Total
Theory			
CIA I	75	(75+75=150/10) converted to 15	25
CIA II	75		
Assignment		5	
Attendance		5	
Practical			
CIA Practical		25	40
Observation Notebook		10	
Attendance		5	
Project			
Review		15	20
Regularity		05	

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1 - Remember; **K2 -** Understanding; **K3 -** Apply; **K4 -** Analyze; **K5 -** Evaluate

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 ↕ K5	Experiments	50	60
	Record Work	10	

3. Project Viva Voce:

Knowledge Level	Section	Marks	Total
K3 ↕ K5	Project Report	60	80
	Viva - voce	20	

24PDB101

Programme Code: 05	**PG DIPLOMA PROGRAMME IN BIODIVERSITY**				
C.P. 1 - INTRODUCTION TO BIODIVERSITY					
Batch 2024-2025	**Semester I**	**Hours / Week 2**	**Total Hours 30**	**Credits 2**	**Skill Development**

COURSE OBJECTIVES

- To know the principles and concepts of biodiversity.
- To understand the services of species diversity.
- To acquire knowledge on the role of biodiversity in maintaining ecobalance.

COURSE OUTCOMES

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

K1 ↕ K5	CO1	Know the pattern of distribution of biodiversity.
	CO2	Understand various aspects and types of species diversity.
	CO3	Ability to identify global distribution of species richness.
	CO4	Analyze the concept, origin and evolution of biodiversity.
	CO5	Evaluate the functional role of species diversity in an ecosystem

SYLLABUS

UNIT – I **(6 Hours)**

Introduction: Concept and definition. Types of biodiversity – genetic, species ecosystem and landscape diversities. α, β and γ diversity. Pattern diversity.

UNIT - II **(6 Hours)**

Species diversity status: Species inventory – problems and monitoring. Current diversity status of flora, fauna and microbes at global and national levels. Centres of diversity – hotspots, megadiversity centres, future of species diversity studies.

UNIT - III **(6 Hours)**

Species diversity history and indices: History and origin of species diversity*. Diversity indices based on species – species richness, abundance and taxic diversity. Comparisons of species diversity of various sites – species/area relationships, spatial patterns of species diversity. Global distribution of species richness – latitudinal, altitudinal and rainfall gradients and other factors.

UNIT - IV **(6 Hours)**

Agrobiodivesity: Introduction. Origin and evolution of cultivated species diversity – act of domestication, geography of domestication, dispersal and diversification. Diversity in domesticated species – land races, advanced cultivars, wild relatives of cultivated plants, wild plants, and feral plants.

24PDB101

UNIT - V **(6 Hours)**

Ecosystem types and services: Classification, measuring ecosystem diversity, major ecosystems of world – forests, grasslands, deserts, fresh water, wetlands and marine. Functional role of species diversity in ecosystems.

*** Self study**

Teaching Methods

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

TEXT BOOKS

1. K.V. Krishnamurthy. (2004). An advanced textbook on biodiversity oxford of IBH publishing Co. Pvt. Ltd. New Delhi.
2. D.R. Harris and G.C. Hillman. (1989). Introduction. In: Harris, D.R. and Hillman, G.C. (Eds.). Foraging and Farming: the Evolution of Plant Exploitation. Unwin Hyman, London, pp. 1-8.
3. P.D. Sharma. Ecology and Environment, Eastogi Publications, Murur.
4. Kelvin J. Gasten and John.I. Spicer. (2004). Biodiversity on Introduction. Black well Publishing company USA.

REFERENCE BOOKS

1. R. Thomas. (1992). Genetic Diversity. *In:* Goombridge, E. (Ed.). Global Biodiversity. Status of the Earth's Living Sources. Chapman & Hall, London, pp. 1-6.
2. A.E. Magurran. (1988). Ecological Diversity and its Measurement. Princeton Univ. Press, Princeton, NJ.
3. E.C. Pielou (1975). Ecological Diversity. John Wiley and Sons. New York. NY.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	S	M
CO2	S	M	H	M	H
CO3	H	S	H	S	S
CO4	H	H	M	S	M
CO5	S	H	S	H	H

S - Strong **H** - High **M** - Medium **L** - Low

24PDB102

Programme Code: 05		**PG DIPLOMA PROGRAMME IN BIODIVERSITY**			
C.P.2 - VALUES, USES AND LOSS OF BIODIVERSITY					
Batch 2024-2025	**Semester I**	**Hours / Week 2**	**Total Hours 30**	**Credits 2**	**Skill Development**

COURSE OBJECTIVES

- To know the value of biodiversity.
- To understand the valuation methods of species content.
- To gain knowledge on the factors of species loss.

COURSE OUTCOMES

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

K1	CO1	Gain knowledge on the aesthetic values of bioresources
↕	CO2	Understand the role of several factors on biodiversity loss
	CO3	Apply knowledge to prevent the loss of biodiversity
	CO4	Analyze the feasible ways to reduce ecosystem loss
K5	CO5	Evaluate ecosystem biodiversity loss and their control measures

SYLLABUS

UNIT - I **(6 Hours)**

Introduction. Biodiversity values – Total environmental value, primary value, total economic value, use value, consumptive use value, productive use value, indirect use value, non-consumptive use value, non-use value, option value, quasi-option value, existence value and bequest value. Ethical and aesthetic value*. Precautionary principle.

UNIT - II **(6 Hours)**

Valuation of biodiversity: Methods – outline on basics of MaCArthur, 1997, Changes in productivity method, contingent valuation method, hedonic pricing method, travel cost method.

UNIT - III **(6 Hours)**

Loss of genetic diversity: Factors causing loss of genetic diversity – Founder effects, demographic bottlenecks, genetic drift, inbreeding depression.

UNIT - IV **(6 Hours)**

Loss of species diversity: Processes responsible for species extinction – Deterministic processes, stochastic processes – demographic uncertainty, environmental uncertainty, natural catastrophis, and genetic uncertainty. Population

size as a critical factor in species extinction – minimum viable population and population viability analysis. Threatened species – definition. IUCN threatened categories and unknown categories.

UNIT - V **(6 Hours)**

Loss of ecosystem diversity: Factors affecting ecosystem degradation and loss. Loss in diversity of major ecosystems – tropical forests, grasslands, inland wetlands, coastal ecosystems, arctic and alpine ecosystems, temperate forests systems, arid and semiarid lands, open oceans. Projected scenario for biodiversity loss.

*** Self study**

Teaching Methods

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

TEXT BOOKS

1. K.V. Krishnamurthy. 2004. An advanced textbook on biodiversity: Principles and practices. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.
2. N. Myers. (2000). The new millennium: An ecology and economy of hope. Curr. Sci. 78: 686-693.
3. J. MacArthur. (1997). The economic valuation of biodiversity, its implications and importance in bioresource planning, and initiations for its regular use in planning conservation projects in India. *In:* Pushpangandan, P., Ravi, K. and Santhosh, V. (Eds.). Conservation and Economic Evaluation of Biodiversity. Vol. 2. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi, pp. 335-354.
4. A. Balmford, G.M. Mace and J.R. Ginsberg. (1998). The challenges to conservation in a changing world putting process on the map. *In:* Mace, G.M., Balmford, A. and Ginsberg, J.R. (Eds.). Conservation in a Changing World. Cambridge University Press, Cambridge, pp. 1-28.

REFERENCE BOOKS

1. J.B. Hughes, G.C. Daily and P.R. Ehrlich. (1997). Population diversity: its extinction. Science 278: 689-691.

2. R. Lande and G.F. Barrowclough. (1987). Effective population size, genetic variation, and their uses in population management. *In:* Soule, M.J. (Ed.). Viable Populations for Conservation. Cambridge University Press, Cambridge, pp. 87-124.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	S	H
CO2	H	S	H	H	M
CO3	H	S	M	H	S
CO4	S	M	H	S	H
CO5	H	S	H	H	S

S - Strong **H** - High **M** - Medium **L** - Low

24PDB103

Programme Code: 05	**PG DIPLOMA PROGRAMME IN BIODIVERSITY**				
C.P. 3 - CONSERVATION AND MANAGEMENT OF BIODIVERSITY					
Batch 2024-2025	**Semester I**	**Hours / Week 2**	**Total Hours 30**	**Credits 2**	**Skill Development**

COURSE OBJECTIVES

- To know the methods of conservation of species.
- To gain knowledge in the area of ecosystem conservation.
- To know the various laws of biodiversity conservation.

COURSE OUTCOMES

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

K1 ↕ K5	CO1	Provide knowledge on species conservation methods
	CO2	Understand the prevailing laws for the conservation of biodiversity both at national and international levels
	CO3	Apply various strategic plans for the conservation of biodiversity
	CO4	Analyze novel ideas for the conservation ecosystem
	CO5	Evaluate ideas on international biodiversity laws and regulations

SYLLABUS

UNIT - I **(6 Hours)**

Practice of Conservation: Current practice in conservation. Conservation of genetic diversity. Conservation of species diversity – categories of species for conservation – threatened species, directly harvested plants, indicator species, umbrella species, keystone species, charishmatic species and recreational species.

UNIT - II **(6 Hours)**

Conservation of ecosystem diversity: Relevance of ecosystem diversity as well as services in conservation. Topdown and bottmup protocol for conservation.

UNIT - III **(6 Hours)**

***In situ* conservation:** Protected areas – biosphere reserves and national parks. World biosphere reserve programmes. Design of biosphere reserves – issues determines the success of a reserve - reserve size, spatial and temporal heterogeneity and dynamics, ideal geographic context, connection of different reserves, natural landscape elements, creation of zones within in a limit. Homegardens.

UNIT - IV **(6 Hours)**

***Ex situ* conservation:** Germplasm collections, botanic gardens, seed banks, test tube gene banks, pollen banks, field gene banks, DNA banks. *In vitro* conservation

methods. Ecosystem restoration. Social approaches to conservation – sacred grooves*, sthalavrikshas.

UNIT - V **(6 Hours)**

Legislations: Role of educational institutions in biodiversity conservation. IUCN, UNEP, UNESCO, WWF, ICSU, FAO, CAB International, WCMC, ISBI. Biodiversity legislation and conservations – International biodiversity laws. Conservation on biological diversity. Trade related intellectual property rights.

*** Self study**

Teaching Methods

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

TEXT BOOKS

1. K.V. Krishnamurthy. (2004). An advanced textbook on biodiversity: Principles and practices. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.
2. R.S. Ambasht. (1988). Text book of Plant Ecology. Lanka Publishers, Varanasi.
3. P.D. Sharma. Ecology and Environment. Rastogi Publications, Meerut.
4. D.R. Given. (1984). Monitoring and science – the next stage in threatened plant conservation in New Zealand. In: Given, D.R. (Ed.). Conservation of Plant Species and Habitats. Nature Conservation Council, Wellington, New Zealand, pp. 83-102.
5. Kumar and Asige (2007) Biodiversity, Principles and Conservation Students edition. India.
6. U. Kumar. (2012) Biodiversity Principles and Conservation Agriobios (India)

REFERENCE BOOKS

1. R. Lande (1988). Genetics and demography in biological conservation. Science 241: 1455-1460.
2. J.A. McNeely, K.R. Miller, W.V.Reid, R.A. Mittermeier and T.B. Werner. (1990). Conserving the World's Biological Diversity, IUCN, Gland, Switzerland.
3. K.N. Ganeshaiah, K. Uma Shaanker and K.S. Bawa. (2001). Conservation of forest genetic resources of a region: combining species-centered and ecosystem based approaches. *In:* Uma Shankar, R., Ganeshaiah, K.N. and Bawa, K.S. (Eds.). Forest

Genetic Resources: Status, Threats and Conservation Strategies. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi, pp. 273-281.

4. E. Ayenus and 24 others. 1999. International ecosystem assessment. Science 286: 685-686.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	S	H
CO2	H	S	H	H	M
CO3	H	M	S	H	S
CO4	S	H	M	H	S
CO5	H	H	S	H	S

S - Strong **H** - High **M** - Medium **L** – Low

24PDB1CL

Programme Code: 05	**PG DIPLOMA PROGRAMME IN BIODIVERSITY**				
CORE PRACTICAL -1 - BIODIVERSITY - I					
Batch 2024-2025	**Semester I**	**Hours / Week 2**	**Total Hours 30**	**Credits 2**	**Skill Development**

COURSE OBJECTIVES

- To learn the techniques for plant community analysis.
- To know the complexity and diversity of plant communication.
- To have the knowledge on endangered animals in protected areas.

COURSE OUTCOMES

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

K3 ↕ K5	CO1	Apply inherent knowledge on conservation of biodiversity in protected areas.
	CO2	Investigate and analyze the status of biodiversity.
	CO3	Able to acknowledge endangered species diversity and to offer conservational strategic plans
	CO4	Acquire knowledge on ecological status of plants in selected communities
	CO5	Quantitatively evaluate plant communities in selected areas.

LIST OF PRACTICALS

1. To know the ecological status of plants in the communities, the field experiments to be done in the natural vegetation are: a) IVI, b) dominance index c) diversity index d) similarity index.
2. To know the animal status with particular reference to tiger and Nilgiri thar - techniques involved census will be studied.
3. To know the richness of birds, aquatic ecosystems are studied using bird census techniques.
4. Field visits to protected areas for biodiversity conservation.

MAPPING

PSO / CO	**PSO1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	S	H	S	M	S
CO2	S	M	H	S	H
CO3	H	H	M	H	H
CO4	S	H	S	M	S
CO5	S	H	M	S	H

S - Strong **H** - High **M** - Medium **L** - Low

24PDB204

Programme Code: 05	**PG DIPLOMA PROGRAMME IN BIODIVERSITY**				
C.P.4 - BIODIVERSITY PROSPECTING AND INDIGENOUS KNOWLEDGE SYSTEM (IKS) AND BIOTECHNOLOGY FOR BIODIVERSITY					
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**	**Skill**
2024-2025	**II**	**2**	**30**	**2**	**Development**

COURSE OBJECTIVES

- To know the ethnic communities of India and their role in bioresource management.
- To understand the bioprospecting of natural bioresources.
- To gain knowledge on the role of biotechnology in processing biogoods.

COURSE OUTCOMES

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

K1 ↕ K5	CO1	Gain indigenous knowledge on ethnic groups and major plant genetic pools species
	CO2	Understand the database of biodiversity
	CO3	Explore knowledge on principles and major objectives of community forest management systems
	CO4	Apply biotechnological tools for the management of biodiversity
	CO5	Determine technological skills for determining variations in biodiversity

SYLLABUS

UNIT - I **(6 Hours)**

Ethnic Community and Biodiversity: Indigenous and ethnic communities of world. Environmental conservation and sustainable uses of natural resources by ethnic societies. Important plant genetic resources conserved by ethnic people in India.

UNIT - II **(6 Hours)**

Bioprospecting: Introduction, IKS, biopiracy. IPRs and ownership of traditional knowledge - issues, Traditional Resource Rights (TRR), Local efforts to date.

UNIT - III **(6 Hours)**

Traditional Societies and Protected areas: Territorial demarcation of traditional societies - introduction. Community forest management. Indigenous people and Protected areas.

24PDB204

UNIT - IV **(6 Hours)**

Biodiversity database: Community biodiversity register. Database and networks on IKS. Community controlled Research. Center for farmers rights. Participatory approach in biodiversity management. Roll of Women, NGOs*.

UNIT - V **(6 Hours)**

Biotechnology and Biodiversity: Monitoring DNA - diversity, PCR based techniques. Use of molecular (DNA) markers to detect plant diversity. Animal biotechnology - recent trends - reproductive technology - artificial insemination, embryo transfer, *in vitro* fertilization. Cloning - DNA cloning, embryo cloning, adult DNA cloning, therapeutic cloning.

*** Self study**

Teaching Methods

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

TEXT BOOKS

1. K.V. Krishnamurthy (2004). An advanced textbook on biodiversity: Principles and practices. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.
2. S.K. Jain. (1987). A manual of ethnobotany. Scientific Publishers, Jodhpur.
3. Rajiv, K. Sinha and Shweta Sinha. Ethnobotany. Surabhi Publications, Jaipur.
4. F. Duff. (1997). Overview of the UNEP/GEF Biodiversity Data Management Project (BDM). *In:* Hawksworth, D.L., Kirk, P.M. and Dextre Clarke, S. (Eds.). Biodiversity Information: Needs and Options. CAB International, Wallingford, UK, pp. 115-123.

REFERENCE BOOKS

1. W. Amaral. (2001). Characterization, evaluation and conservation of forest genetic resources: The potential and limitation of new biotechnology tools. *In:* Uma Shankar, R., Ganeshaiah, K.N. and Bawa, K.S. (Eds.). Forest Genetic Resources: Status, Threats and Conservation Strategies. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi, pp. 115-125.
2. M. Lakshikumaran, P.S. Srivastava and A. Singh. (2001). Applications of molecular marker technologies for genetic analysis and assessment of genetic diversity in forest tree species. *In:* Uma Shankar, R., Ganeshaiah, K.N. and Bawa, K.S. (Eds.). Forest

Genetic Resources: Status, Threats and Conservation Strategies. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi, pp. 153-191.

3. P.L. McCarty. (1983). *In situ* bioremediation of chlorinated solvents. Curr. Opinions Biotech. 4: 323-330.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	M	S	H
CO2	S	H	S	M	S
CO3	H	S	S	H	H
CO4	S	H	M	S	H
CO5	S	S	H	H	H

S - Strong **H** - High **M** - Medium **L** - Low

24PDB205

Programme Code: 05		**PG DIPLOMA PROGRAMME IN BIODIVERSITY**			
C.P.5 - WILDLIFE BIOLOGY AND CONSERVATION POLICIES AND LAW					
Batch 2024-2025	**Semester II**	**Hours / Week 2**	**Total Hours 30**	**Credits 2**	**Skill Development**

COURSE OBJECTIVES

- To understand the values and ethics in wild life conservation.
- To know the diversity and importance of avian fauna.
- To gain knowledge on issues in wildlife conservation.

COURSE OUTCOMES

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

K1 ↕ K5	CO1	Understand the values and ethics of wildlife conservation
	CO2	Attain knowledge on the diversity of avian ecology
	CO3	Assess community based approaches for the conservation of wild life
	CO4	Analyze current issues on protection and conservation of forest and wildlife
	CO5	Enumerate skills and knowledge on laws concerning forest

SYLLABUS

Unit - I **(6 Hours)**

Values and Ethics in Wildlife Conservation: Definitions and (Instrumental; Intrinsic; Ecocentrism; Religious traditions and conservation) Ethics in conservation. Field Techniques: For invertebrates (planktons; insects/arachnids) and vertebrates (amphibian, reptile, aves and mammals), Line/belt transects, Quadrat sampling, Point count, Scan sampling, Focal sampling, Time constraints sampling, Population indices, Introduction of Wildlife telemetry, Remotely triggered Camera Trapping Avian acoustics and identification based on calls.

Unit - II **(6 Hours)**

Avian ecology: Avian community ecology and habitat selection. Sexual selection in birds. Bird migration. Bird census techniques, Migratory flyways, threats to migrant populations. Sampling designs for population estimation: Population estimation methods, Distance based Sampling Methods, Mark-Recapture for Closed Population, Indices, and Estimation of Demographic parameters.

24PDB205

Unit - III **(6 Hours)**

Current issues in wildlife conservation with case studies: Community based conservation approach, Impact of climate change on species diversity, Compensate payment for environmental services, Human-wildlife conflict, Poaching, illegal trading, Conflict management.

Unit - IV **(6 Hours)**

Protection of Forest and Wildlife Forest Law in India: - Forestry in British and Post British India, Forest as a source of Revenue, Forest Protection and Sustainable use of Forests: Judicial Perspective ,The Indian forest Act, 1927, The Forest (Conservation) Act, 1980, The Forest (Conservation) Rules, 1981,2003, The Environment (Protection) Act, 1986, Ozone Depleting Substances (Regulation)Rules, 2000 Wildlife laws in India - The Wildlife (Protection) Act, 1972; The Wildlife (Protection) Rules, 1995; The Wildlife (Protection) Amendment Act, 2002, Preservation and Management of wildlife in India: Court Decisions; Ecotourism and Forest Protection*.

Unit - V **(6 Hours)**

Laws Concerning Forest: Wildlife and People The Circular Concerning Joint Forest Management, 1990; Panchayats (Extension to Scheduled Areas) PESA Act, 1996; Forest Right Act, 2006; Recognition of ZOO Rules, 1992; International Laws and Policies Concerning Biodiversity; Gaps in Present Laws and Polices with respect to Biodiversity Conservation.

*** Self study**

Teaching Methods

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

TEXT BOOKS

1. K.V. Krishnamurthy. (2003). An advanced textbook on biodiversity: Principles and practices. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.
2. P.D. Sharma. (1994). Ecology and Environment. Rastogi Publications, Meerut.
3. R.S. Ambasht. (1988). Text book of Plant Ecology. Lanka Publishers, Varanasi.
4. B.B. Hosetti. (2003). Wildlife Management in India, Pointer Publishers, Jaipur

5. T.I. Khan. (1999). Global Biodiversity Conservation Measures, Pointer Publishers, Jaipur.
6. T.I. Khan. (2001). Global Biodiversity and Environmental Conservation, Pointer Publishers, Jaipur

REFERENCE BOOK

1. A. Rosenecraz. (1995). Environmental law and policy in India: Cases, materials and statutes. *In*: Armin Rosenecraz, Shyam Divan, Martha L Noble. (Reprt Eds). N M Tripathi Pvt. Ltd, Bombay, India, pp 555.
2. P. Leela Krishnan. (1999). Environmental law in India. Butterworths, New Delhi, India, p. 194.
3. M.T. Cirelli. (2002). Legal Trends in Wildlife Management, FAO Legislative Study No. 74.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	S	S	M
CO2	H	H	M	H	H
CO3	S	H	S	M	S
CO4	S	M	M	S	H
CO5	M	S	H	H	H

S - Strong **H** - High **M** - Medium **L** - Low

24PDB2CM

Programme Code: 05		**PG DIPLOMA PROGRAMME IN BIODIVERSITY**			
CORE PRACTICAL -2 – BIODIVERSITY - II					
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**	**Skill**
2024-2025	**II**	**2**	**30**	**2**	**Development**

COURSE OBJECTIVES

- To learn the various field techniques for analysis the flora and fauna.
- Attain the knowledge on handling for instruments in biodiversity.
- To inherit knowledge on wildlife conservation.

COURSE OUTCOMES

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

K3 ↕ K5	CO1	Apply inherent knowledge on *in vitro* biotechnological techniques in conservation of biodiversity.
	CO2	Investigate and analyze the avian community.
	CO3	Able to acknowledge endangered species diversity and to offer conservational strategic plans
	CO4	Acquire knowledge on protection of forest and wildlife forest conservation laws
	CO5	Gain knowledge on vegetation types and conservation measures through field visits

LIST OF PRACTICALS

1. Line transect – Determination of frequency of flora and fauna (birds) in the surrounding areas
2. Belt transect - Determination of frequency and density of flora and fauna (birds) in the surrounding areas
3. Mapping Tree Species Diversity - Vegetation pattern analysis.
4. Traditional knowledge on biodiversity conservation – Interaction with tribal communities.
5. Microbial diversity of soil – Bacteria and Fungi – Serial dilution method.
6. Field visit - Report preparation on vegetation types, conservation measures undertaken in biosphere reserves/ national parks/ sanctuaries etc.

MAPPING

PSO / CO	**PSO1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	S	H	S	M	S
CO2	S	M	H	S	H
CO3	H	H	M	H	H
CO4	S	H	S	M	S
CO5	S	H	M	S	H

S - Strong **H** - High **M** - Medium **L** - Low

24PDB2Z1

Programme Code: 06		**PG DIPLOMA PROGRAMME IN BIODIVERSITY**			
PROJECT & VIVA – VOCE					
Batch 2024-2025	**Semester II**	**Hours / Week 4**	**Total Hours 60**	**Credits 2**	**Skill Development**

COURSE OBJECTIVES

- To gain knowledge on species diversity at microbe, plant and animal level in natural vegetations.
- To learn the techniques used to sample the vegetation.
- To understand the modern methods in conservation of species.

COURSE OUTCOMES

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

K3 ↕ K5	CO1	Develop local-specific management strategies for the sustainable utilization and conservation of bioresources.
	CO2	Analyze the population structure of flora in natural vegetation.
	CO3	Evaluate problems relevant to conservation of floral and faunal biodiversity
	CO4	Examine the sample size of the vegetation in a given study area
	CO5	Evaluate the population size of various wild animals in a forest.

Group project work will be allotted to group of students under the supervision and guidance of the faculty members during II Semester. Project works related with survey and population studies of microbes, plants and animals, management of bioresearches and conservation of flora and fauna will be allotted to the students based on the lot system. The students shall do their projects under their supervisors and submit their dissertations at the end of II Semester. 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.

PDB21

Guidelines for the Distribution of Marks

CIA	Review -	15	**20**
	Regularity	05	
ESE	Project Report	60	**80**
	Viva – Voce	20	
	Grand Total		**100**

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	S	S	M
CO2	H	S	M	H	M
CO3	S	H	S	S	S
CO4	S	M	M	S	H
CO5	S	H	M	S	H

S - Strong **H** - High **M** - Medium **L** - Low