

(Abstract)

FYUGP -Modified Scheme (All semesters) & Second Semester syllabus of B.Sc. Forestry Programme - Approved & Implemented w. e. f . 2024 Admission- Orders Issued

ACADEMIC C SECTION

ACAD C/ACAD C3/23394/2024 (I)

Dated: 01.02.2025

Read:-1. U.O. of even number dated 11/11/2024

2. E-mail of the Chairperson, Board of Studies in Forestry (Cd), dated: 31/12/2024
3. The Minutes of the Meeting of the Board of Studies held on 31/12/2024
4. Email dated 09/01/2025 from Dr. S Sudheesh, Dean, Faculty of Science
5. Email dated 20/01/2025 from the Chairperson, Board of Studies in Forestry (Cd)
6. Minutes of the meeting of the Standing Committee of the Academic council dated 21/01/2025
7. The Orders of the Vice Chancellor in File No. ACAD C/ACAD C3/23394/2024 dtd.01/02/2025

ORDER

1.The Scheme (All Semesters) and Syllabus (First & Second Semesters only) of the B.Sc.Forestry (FYUGP) Programme was approved vide the paper read (1) above.

2. Meanwhile, as per the paper read (2) above, the Chairperson, Board of Studies in Forestry (Cd) submitted the Modified Scheme (All Semesters) and the Syllabus of the Second Semester B.Sc. Forestry Programme to be implemented in affiliated colleges w.e.f. 2024 admission along with the Minutes of the BoS vide paper read (3), approving these modifications.

3.Subsequently, the Modified Scheme (All Semesters) and the Syllabus of the Second Semester B.Sc. Forestry Programme to be implemented in affiliated colleges w.e.f.2024 admission was forwarded to the Dean, Faculty of Science, for verification.

4. The Dean, vide paper read (4) above suggested certain modifications and the Chairperson, as per paper read (5) above forwarded the Modified Scheme (All Semesters) and the Syllabus of the Second Semester B.Sc. Forestry Programme (2024 admission), after incorporating the Modifications suggested by the Dean, Faculty of Science.

5.As per the orders of Vice Chancellor, the modified Syllabus was placed before the Standing Committee of the Academic Council for consideration and the Standing Committee vide paper read (6) above recommended to approve the same.

6.The Vice Chancellor, in tune with the recommendation of the Standing Committee of the Academic Council, ***approved the Modified Scheme (All Semesters) and the Syllabus of the Second Semester B.Sc. Forestry (FYUGP) Programme***, exercising the powers of the Academic Council conferred under section 11 (1) Chapter III of Kannur University Act 1996 and ***accorded sanction to implement the same in the Affiliated Colleges w.e.f. 2024 admission.***

7.The Modified Scheme (All Semesters) and the Syllabus of the Second Semester B.Sc.

Forestry programme (FYUGP) to be implemented in the Affiliated Colleges w.e.f. 2024 admission are appended with this U.O. and uploaded in the official website of the University.

Orders are issued accordingly.

Sd/-

ANIL CHANDRAN R
DEPUTY REGISTRAR (ACADEMIC)
For REGISTRAR

To: 1. The Principals of affiliated Colleges offering the B.Sc. Forestry programme
2. The Chairperson, Board of Studies in Forestry(Cd)

Copy To: 1. PA to CE (to circulate the same among the sections concerned under Examination Branch)
2. PS to VC/PA to R
3. JR II (Exam)
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Forwarded / By Order


SECTION OFFICER



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SYLLABUS FOR

FOUR YEAR UNDER GRADUATE PROGRAMME

(FYUGP) IN FORESTRY

(2024 Admission onwards)

Foreword

The Four-Year Undergraduate Programme (FYUGP) in Forestry is undergoing significant changes to better meet the needs of students, industries, and society. Education is seen as vital, and it's essential that the courses offered reflect the demands of the modern world. This means regularly updating the curriculum to keep pace with changes in society and the economy.

It is crucial for higher education to equip students with practical skills that are directly relevant to their chosen fields. However, despite the increasing number of people attending college, there are concerns about whether the education they receive adequately prepares them for the workforce. This is particularly true when it comes to skills that employers are looking for.

As our world becomes more interconnected and fast-paced, it's essential for educational institutions to evolve and teach students the skills they need to succeed in the 21st century. This includes not only technical skills but also critical thinking, communication, and adaptability. In the field of forestry, there is an urgent need to focus on forest conservation, biodiversity preservation, and sustainable management of forest resources. The curriculum must address these critical issues to prepare students to tackle the environmental challenges of our time. Topics such as ecosystem services, climate change mitigation, and the socio-economic aspects of forest management are essential components of a modern forestry education.

The government of Kerala is taking proactive steps to improve higher education by setting up commissions to recommend changes to policies, regulations, and evaluation systems. These efforts include a focus on integrating forest conservation principles into the educational framework.

As part of these efforts, the undergraduate curriculum, including the FYUGP in Forestry, is being restructured to better align with the goals of creating a knowledgeable society capable of driving sustainable development. These changes aim to ensure that higher education remains relevant and beneficial for both students and society as a whole, fostering a new generation of forestry professionals equipped to protect and manage our vital forest resources.

Aneesh K S,
Chairperson,
BoS, UG Forestry

Preamble

Welcome to the Four-Year Undergraduate Programme (FYUGP) in BSc Forestry at Kannur University. This syllabus has been carefully crafted to provide students with a comprehensive understanding of the vital field of forestry while equipping them with the necessary skills to thrive in today's dynamic environment.

Forestry, the science and art of managing forests, trees, and related natural resources, is a field of immense importance for ecological balance, biodiversity conservation, and sustainable development. As we witness rapid advancements in science and technology, the study of forestry continues to evolve, presenting new opportunities and challenges.

This syllabus aims to blend theoretical knowledge with practical applications, offering students a well-rounded education that prepares them for both academic pursuits and professional endeavours. Through a combination of classroom lectures, laboratory experiments, fieldwork, and research projects, students will delve deep into the intricate world of forest biology, exploring topics such as forest ecology, silviculture, forest management, conservation biology, wildlife management, and environmental policy.

At Kannur University, we are committed to providing our students with a stimulating learning environment that fosters curiosity, critical thinking, and a passion for discovery. We encourage active participation, independent thinking, and collaborative learning, ensuring that our graduates emerge as confident and competent individuals ready to make meaningful contributions to society.

This syllabus represents our dedication to academic excellence, innovation, and continuous improvement. We believe that by nurturing a deep appreciation for forests and natural resources and instilling a sense of responsibility towards environmental stewardship, our students will become future leaders who can address the pressing challenges facing our planet, including climate change, deforestation, and biodiversity loss.

We extend our best wishes to all students embarking on this educational journey and trust that their time spent studying forestry at Kannur University will be enriching, rewarding, and transformative.

KANNUR UNIVERSITY

Vision and Mission Statements

Vision: To establish a teaching, residential and affiliating University and to provide equitable and just access to quality higher education involving the generation, dissemination and a critical application of knowledge with special focus on the development of higher education in Kasaragod and Kannur Revenue Districts and the Manandavady Taluk of Wayanad Revenue District.

Mission:

- To produce and disseminate new knowledge and to find novel avenues for application of such knowledge.
- To adopt critical pedagogic practices which uphold scientific temper, the uncompromised spirit of enquiry and the right to dissent.
- To uphold democratic, multicultural, secular, environmental and gender sensitive values as the foundational principles of higher education and to cater to the modern notions of equity, social justice and merit in all educational endeavours.
- To affiliate colleges and other institutions of higher learning and to monitor academic ethical, administrative and infrastructural standards in such institutions.
- To build stronger community networks based on the values and principles of higher education and to ensure the region's intellectual integration with national vision and international standards.
- To associate with the local self-governing bodies and other statutory as well as nongovernmental organizations for continuing education and also for building public awareness on important social, cultural, and other policy issues.

BOARD OF STUDIES - FORESTRY (UG)

Chairperson		
1	Aneesh K S	Assistant Professor, Department of Forest Resource Management, College of forestry, Vellanikkara, KAU.
Members		
2	Aparna P	Assistant Professor, Department of Botany, Sree Narayana College, Kannur.
3	Resmi P Thomas	Assistant Professor, Department of Botany, Sree Narayana College, Kannur.
4	Malik Fasil M	Assistant Professor, Department of Wildlife Science, College of forestry, Vellanikkara, KAU.
5	Dr. Ganesh Gopal T M	Assistant Professor, Department of Wood Science and Technology, Mangattuparamba Campus, Kannur University.
6	Dr. Manoj K	Assistant Professor, Department of Environmental Studies, Mangattuparamba Campus, Kannur University.
7	Dr. P Balakrishnan Peroth	Sr. Scientist, Department of Wildlife Biology, Kerala Forest Research Institute, Thrissur.
8	Dr. Amruth M	Sr. Scientist, Department of Sociology, Kerala Forest Research Institute, Thrissur.
9	Dr. Santhosh Sreevihar	Assistant Professor, Department of Zoology, Malabar Christian College, Calicut.
10	Dr. Suresh V	Assistant Professor, Department of Botany, Govt. Victoria College, Palakkad
11	Dr. Sreenivasan E	Industrial Expert, Head R & D, The western India Plywood Ltd.
Special Invitees		
12	Sneha C,	Assistant Professor, Department of Forestry, Sir Syed College, Taliparamba
13	Azhar Ali A	Assistant Professor, Department of Forestry, Sir Syed College, Taliparamba

FYUGP BSc FORESTRY ADHOC COMMITTEE

1	Prof. S Sudheesh (Chairperson)	Dean, Faculty of Science
2	Sneha C, (Convener)	Assistant Professor, Department of Forestry, Sir Syed College, Taliparamba
3	Aneesh K S	Assistant Professor, Department of Forest Resource Management, College of forestry, Vellanikkara, KAU.
4	Malik Fasil M	Assistant Professor, Department of Wildlife Science, College of forestry, Vellanikkara, KAU.
5	Azhar Ali A	Assistant Professor, Department of Forestry, Sir Syed College, Taliparamba
6	Dr. Ganesh Gopal T M	Assistant Professor, Department of Wood Science and Technology, Mangattuparamba Campus, Kannur University.
7	Dr. Manoj K	Assistant Professor, Department of Environmental Studies, Mangattuparamba Campus, Kannur University.
8	Dr. P Balakrishnan Peroth	Sr. Scientist, Department of Wildlife Biology, KFRI, Thrissur.
9	Dr. Amruth M	Sr. Scientist, Department of Sociology, KFRI, Thrissur.
10	Dr. Santhosh Sreevihar	Assistant Professor, Department of Zoology, Malabar Christian College, Calicut.
11	Dr. Suresh V	Assistant Professor, Department of Botany, Govt. Victoria College, Palakkad

KANNUR UNIVERSITY

UG PROGRAMME OUTCOMES (PO)

PO1	Critical Thinking
1.1	Acquire the ability to apply the basic tenets of logic and science to thoughts, actions, and interventions.
1.2	Develop the ability to chart out a progressive direction for actions and interventions by learning to recognize the presence of hegemonic ideology within certain dominant notions.
1.3	Develop self-critical abilities and also the ability to view positions, problems, and social issues from plural perspectives.
PO2	Effective Citizenship
2.1	Learn to participate in nation-building by adhering to the principles of sovereignty of the nation, socialism, secularism, democracy, and the values that guide a republic.
2.2	Develop and practice gender sensitive attitudes, environmental awareness, empathetic social awareness about various kinds of marginalization and the ability to understand and resist various kinds of discrimination.
2.3	Internalize certain highlights of the nation's and region's history. Especially of the freedom movement, the renaissance within native societies and the project of modernization of the postcolonial society.
PO3	Effective Communication
3.1	Acquire the ability to speak, write, read, and listen clearly in person and through electronic media in both English and in one Modern Indian Language
3.2	Learn to articulate, analyse, synthesise, and evaluate ideas and situations in a well-informed manner.
3.3	Generate hypotheses and articulate assent or dissent by employing both reason and creative thinking.
PO4	Interdisciplinarity
4.1	Perceive knowledge as an organic, comprehensive, interrelated, and integrated faculty of the human mind
4.2	Understand the issues of environmental contexts and sustainable development as a basic interdisciplinary concern of all disciplines.
4.3	Develop aesthetic, social, humanistic, and artistic sensibilities for problem solving and evolving a comprehensive perspective

FYUGP IN FORESTRY

PROGRAMME SPECIFIC OUTCOMES (PSOs)

After successful completion of four-year UG programme in Forestry, a student should be able to:

PSO 1	Demonstrate a deep understanding of forest ecosystems, including the interactions between biotic and abiotic components, ecological succession, and the role of forests in global biogeochemical cycles.
PSO 2	Implement and manage sustainable forestry practices, ensuring the balance between economic, ecological, and social values in forest resource utilization and conservation.
PSO 3	Utilize advanced tools and technologies such as Geographic Information Systems (GIS), remote sensing, and drone technology for forest inventory, mapping, monitoring, and management.
PSO 4	Plan and execute wildlife management and habitat conservation strategies, ensuring the protection and restoration of biodiversity within forest ecosystems.
PSO 5	Engage in participatory approaches to forestry that involve local communities, fostering collaboration and integrating traditional knowledge with scientific practices for sustainable forest management.
PSO 6	Effectively communicate forestry-related issues to diverse audiences, advocating for sustainable forestry practices and raising awareness about the importance of forests in addressing environmental and societal challenges.
PSO 7	Promote a sense of environmental stewardship, fostering a positive vision for utilizing forests to combat global challenges, including climate change.

BSc FORESTRY (MAJOR) PATHWAY COURSES

Sl. No.	Level	Course Code	Sem	Name of the course	Credit	ESE	CE	PRACT	TOTAL
1st YEAR BSc FORESTRY									
I SEMESTER									
1	100-199	KU1DSCFOR101	1	Forest and Forest Ecology	3 + 1	50	25	25	100
II SEMESTER									
2	100-199	KU2DSCFOR105	2	Principles and Practices of Silviculture	3+ 1	50	25	25	100
2nd YEAR BSc FORESTRY									
III SEMESTER									
3	200-299	KU3DSCFOR201	3	Tree Physiology	3 + 1	50	25	25	100
4	200-299	KU3DSCFOR202	3	Wood Structure and Functions	4	70	30	0	100
IV SEMESTER									
5	200-299	KU4DSCFOR206	4	Forest Utilization	3 + 1	50	25	25	100
6	200-299	KU4DSCFOR207	4	Wildlife Management and Conservation Biology	3 + 1	50	25	25	100
7	200-299	KU4DSCFOR208	4	Forest Genetics and Biotechnology	3+ 1	50	25	25	100
3rd YEAR BSc FORESTRY									
V SEMESTER									
Sl. No.	Level	Course Code	Sem	Name of the course	credit	ESE	CE	PRACT	TOTAL
8	300-399	KU5DSCFOR301	5	Soil Science	3+ 1	50	25	25	100
9	300-399	KU5DSCFOR302	5	Forest Health and Protection	3+ 1	50	25	25	100
10	300-399	KU5DSCFOR303	5	Agroforestry, Social Forestry and Human Dimension	4	70	30	0	100

11	300-399	KU5DSEFOR304	5	<i>Wildlife Monitoring Techniques</i>	4	70	30	0	100
12	300-399	KU5DSEFOR305	5	<i>Vegetation Analysis and Biodiversity Assessment</i>	4	70	30	0	100
13	300-399	KU5DSEFOR306	5	<i>Forest Mensuration</i>	4	70	30	0	100
14	300-399	KU5DSEFOR307	5	<i>Forest Tree Breeding</i>	4	70	30	0	100
VI SEMESTER									
15	300-399	KU6DSCFOR309	6	Seed Technology	3 + 1	50	25	25	100
16	300-399	KU6DSCFOR310	6	Forest Economics and Elementary Statistics	3+ 1	50	25	25	100
17	300-399	KU6DSCFOR311	6	Forest Management and Plantation Forestry	4	70	30	0	100
18	300-399	KU6DSEFOR312	6	<i>Wood Defects, Degradation and Preservation</i>	4	70	30	0	100
19	300-399	KU6DSEFOR313	6	<i>Certification of Forest Products</i>	4	70	30	0	100
20	300-399	KU6DSEFOR314	6	<i>Silviculture of Indian Trees</i>	4	70	30	0	100
21	300-399	KU6DSEFOR315	6	<i>Forest Survey and Geoinformatics</i>	4	70	30	0	100
22	300-399	KU6INTFOR317	6	Internship/apprenticeship/ FFE / Nature Camp	2	35	15	0	50
4th YEAR BSc FORESTRY									
VII SEMESTER									
Sl. No.	Level	Course Code	Sem	Name of the course	credit	ESE	CE	PRAC T	TOTAL
23	400-499	KU7DCCFOR401	7	Microbiology for Forestry	3+ 1	50	25	25	100
24	400-499	KU7DCCFOR402	7	Forest Hydrology and Watershed Management	4	70	30	0	100
25	400-499	KU7DCCFOR403	7	Wood based Industries	4	70	30	0	100
26	400-499	KU7DCCFOR404	7	Environmental Impact Assessment and Auditing	4	70	30	0	100

27	400-499	KU7DCCFOR405	7	Forest Stand Dynamics	4	70	30	0	100
VIII SEMESTER									
28	400-499	KU8DCCFOR406	8	Tree Breeding and Advanced Propagation Techniques	3+ 1	50	25	25	100
29	400-499	KU8DCCFOR407	8	Environmental legislation and Management	3+ 1	50	25	25	100
30	400-499	KU8DCCFOR408	8	Climate Change and Disaster Management	3+ 1	50	25	25	100
31	400-499	KU8DCEFOR409	8	<i>Advanced Bioinformatics</i>	3+ 1	50	25	25	100
32	400-499	KU8DCEFOR410	8	<i>Ecological modelling</i>	3+ 1	50	25	25	100
33	400-499	KU8DCEFOR411	8	<i>R programming</i>	3+ 1	50	25	25	100
34	400-499	KU8DCEFOR412	8	<i>Biostatistics</i>	3+ 1	50	25	25	100
35	400-499	KU8DCEFOR413	8	<i>Research Methodology</i>	3+ 1	50	25	25	100
36	400-499	KU8DCEFOR414	8	<i>Scientific Writing</i>	3+ 1	50	25	25	100
37	400-499	KU8DCEFOR415	8	<i>Global Change Ecology</i>	3+ 1	50	25	25	100
38	400-499	KU8DCEFOR416	8	<i>Wood variation</i>	3+ 1	50	25	25	100
39	400-499	KU8DCEFOR417	8	<i>Biometrical Genetics</i>	3+ 1	50	25	25	100
40	PROJECT	KU8PRJFOR426	8	Project	8	140	60	--	200
41	PROJECT	KU8PRJFOR427	8	Project	12	210	90	--	300
41	MOOC/ONLINE COURSE		8	MOOC/ONLINE COURSES	12				

BSc FORESTRY (MINOR) PATHWAY COURSES

Sl. No.	Level	Course Code	Sem	Name of the course	credit	ESE	CE	PRACT	TOTAL
I SEMESTER									
42	100-199	KU1DSCFOR102	1	Introduction to Forest Resources	3 + 1	50	25	25	100
43	100-199	KU1DSCFOR103	1	Introduction to Wildlife Sciences	3 + 1	50	25	25	100
II SEMESTER									
44	100-199	KU2DSCFOR105	2	Forest Botany	3 + 1	50	25	25	100
45	100-199	KU2DSCFOR106	2	Field Ornithology and Bird Watching	3 + 1	50	25	25	100
III SEMESTER									
46	200-299	KU3DSCFOR203	3	Introduction to Agroforestry	3 + 1	50	25	25	100
47	200-299	KU3DSCFOR204	3	Wildlife Management	3 + 1	50	25	25	100
VIII SEMESTER									
48	300-399	KU8DSEFOR418	8	<i>Ethnobiology and Intellectual Property Rights</i>	3+ 1	50	25	25	100
49	300-399	KU8DSEFOR419	8	<i>Entrepreneurial Forestry</i>	3+ 1	50	25	25	100
50	300-399	KU8DSEFOR420	8	<i>Green technology and Sustainable Development</i>	3+ 1	50	25	25	100
51	300-399	KU8DSEFOR421	8	<i>Remote Sensing and GIS</i>	3+ 1	50	25	25	100
52	300-399	KU8DSEFOR422	8	<i>Medicinal and Aromatic Plants</i>	3+ 1	50	25	25	100
53	300-399	KU8DSEFOR423	8	<i>Zoonotic Disease Management</i>	3+ 1	50	25	25	100
54	300-399	KU8DSEFOR424	8	<i>Biochemistry</i>	3+ 1	50	25	25	100
55	300-399	KU8DSEFOR425	8	<i>Instrumentation and Biological Techniques</i>	3+ 1	50	25	25	100

VALUE ADDITION AND SKILL ENHANCEMENT COURSES

Sl. No.	Course Code	Name of the course	credit	ESE	CE	PRACT	TOTAL
VAC							
56	KU3VACFOR220	Basic Life Support Skills and First Aid	3				
57	KU3VACFOR221	Field Etiquettes in Forestry	3				
58	KU4VACFOR222	Civic Education	3				
59	KU4VACFOR223	Towards Environmental Stewardship	3				
60	KU4VACFOR224	Citizen Science in Conservation	3				
61	KU4VACFOR225	Bioethics and IPR	3				
SEC							
62	KU4SECFOR230	Dendrology	3				
63	KU4SECFOR231	Ornithology	3				
64	KU4SECFOR232	Herpetology	3				
65	KU4SECFOR233	Forest Biometry	3				
66	KU5SECFOR330	Introduction to IT	3				
67	KU5SECFOR331	Indoor Plantscaping	3				
68	KU5SECFOR332	Urban Greenscaping	3				
69	KU5SECFOR333	Commercial Bee Keeping	3				
70	KU6SECFOR334	Drone Application in Natural Resource Management	3				
71	KU6SECFOR335	Conservation photography	3				
72	KU6SECFOR336	IOT in Plant Nursery Automation	3				

73	KU6SECFOR337	Woodworking and Finishing Techniques	3				
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SYLLABUS INDEXName of the Major: **Forestry**

SEMESTER I								
Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O
KU1DSCFOR101	Forest and Forest Ecology	DSC A	4	5	3		2	
KU1DSCFOR102	Introduction to Forest Resources	DSC B	4	5	3		2	
KU1DSCFOR103	Introduction to Wildlife Sciences	DSC C	4	5	3		2	
KU1MDCFOR104	Ecotourism	MDC 1	3	4	3		0	
		AEC 1 (E)	3	3	3		0	
		AEC 2 (L)	3	3	3		0	
SEMESTER II								
Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O
KU2DSCFOR105	Principles and Practices of Silviculture	DSC A	4	5	3		2	
KU2DSCFOR106	Forest Botany	DSC B	4	5	3		2	

KU2DSCFOR107	Field Ornithology and Bird Watching	DSC C	4	5	3		2	
KU2MDCFOR108	Wildlife Photography	MDC 2	3	3	3		0	
		AEC 3 (E)	3	3	3		0	
		AEC 4 (L)	3	3	3		0	
SEMESTER III								
Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O
KU3DSCFOR201	Tree Physiology	DSC A	4	5	3		2	
KU3DSCFOR202	Wood Structure and Functions	DSC A	4	4	4		0	
KU3DSCFOR203	Introduction to Agroforestry	DSC B	4	5	3		2	
KU3DSCFOR204	Wildlife Management	DSC C	4	5	3		2	
KU3VACFOR220	Basic Life Support Skills and First Aid	VAC (Any one)	3	3	3		0	
KU3VACFOR221	Field Etiquettes in Forestry							
	<i>MDC 3 in Kerala specific content shall be offered by language disciplines only</i>	MDC 3	3	3	3		0	
SEMESTER IV								
Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O

KU4DSCFOR206	Forest Utilization	DSC A	4	5	3		2	
KU4DSCFOR207	Wildlife Management and Conservation Biology	DSC A	4	5	3		2	
KU4DSCFOR208	Forest Genetics and Biotechnology	DSC A	4	5	3		2	
KU4VACFOR222	Civic Education	VAC (Any one)	3	3	3		0	
KU4VACFOR223	Towards Environmental Stewardship							
KU4VACFOR224	Citizen Science in Conservation	VAC (Any one)	3	3	3		0	
KU4VACFOR225	Bioethics and IPR							
KU4SECFOR230	Dendrology	SEC (Any one)	3	3	3		0	
KU4SECFOR231	Ornithology							
KU4SECFOR232	Herpetology							
KU4SECFOR233	Forest Biometry							
SEMESTER V								
Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O
KU5DSCFOR301	Soil Science	DSC A	4	5	3		2	
KU5DSCFOR302	Forest Health and Protection	DSC A	4	5	3		2	
KU5DSCFOR303	Agroforestry, Social Forestry and Human dimension	DSC A	4	4	4			
KU5DSEFOR304	Wildlife Monitoring Techniques	DSE 1	4	4	4			
KU5DSEFOR305	Vegetation Analysis and Biodiversity Assessment		4	4	4			

SEMESTER VII

KU6INTFOR317	Intern/apprentice/FFE /Nature Camp		2				2	
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Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O
KU7DCCFOR401	Microbiology for Forestry	DCC	4	5	3		2	
KU7DCCFOR402	Forest Hydrology and Watershed Management	DCC	4	4	4		0	
KU7DCCFOR403	Wood based Industries	DCC	4	4	4		0	
KU7DCCFOR404	Environmental Impact Assessment and Auditing	DCC	4	4	4		0	
KU7DCCFOR405	Forest Stand Dynamics	DCC	4	4	4		0	
SEMESTER VIII								
Course Code	Title of the Course	Type of the Course DSC, MDC, SEC etc.	Credit	Hours /week	Hour Distribution			
					L	T	P	O
KU8DCCFOR406	Tree Breeding and Advanced Propagation Techniques	DCC	4	5	3		2	
KU8DCCFOR407	Environmental legislation and Management	DCC	4	5	3		2	
KU8DCCFOR408	Climate Change and Disaster Management	DCC	4	5	3		2	
KU8DCEFOR409	<i>Advanced Bioinformatics</i>	DCE	4	5	3		2	
KU8DCEFOR410	<i>Ecological modelling</i>		4	5	3		2	
KU8DCEFOR411	<i>R programming</i>		4	5	3		2	

KU8DCEFOR412	<i>Biostatistics</i>	DCE	4	5	3		2	
KU8DCEFOR413	<i>Research Methodology</i>		4	5	3		2	
KU8DCEFOR414	<i>Scientific Writing</i>		4	5	3		2	
KU8DCEFOR415	<i>Global Change Ecology</i>	DCE	4	5	3		2	
KU8DCEFOR416	<i>Wood variation</i>		4	5	3		2	
KU8DCEFOR417	<i>Biometrical Genetics</i>		4	5	3		2	
KU8DSEFOR418	<i>Ethnobiology and Intellectual Property Rights</i>	DSE (For Minor Pathway)	4	5	3		2	
KU8DSEFOR419	<i>Entrepreneurial Forestry</i>		4	5	3		2	
KU8DSEFOR420	<i>Green technology and Sustainable Development</i>	DSE (For Minor Pathway)	4	5	3		2	
KU8DSEFOR421	<i>Remote Sensing and GIS</i>		4	5	3		2	
KU8DSEFOR422	<i>Medicinal and Aromatic Plants</i>	DSE (For Minor Pathway)	4	5	3		2	
KU8DSEFOR423	<i>Zoonotic Disease Management</i>		4	5	3		2	
KU8DSEFOR424	<i>Biochemistry</i>	DSE (For Minor Pathway)	4	5	3		2	
KU8DSEFOR425	<i>Instrumentation and Biological Techniques</i>		4	5	3		2	
KU8PRJFOR426	<i>PROJECT</i>	8 Credit						

KU8PRJFOR427		12 Credit						
	MOOC/ONLINE COURSES	12 Credit						

DSC - Discipline Specific Pathway components (Major/Minor); DSE - Discipline Specific Pathway components (Elective); DCC - Discipline Specific Capstone Components; DCE - Discipline Specific Capstone Components (Elective); AEC - Ability Enhancement courses; SEC - Skill Enhancement Courses; VAC - Value Addition Courses; MDC - Multi-disciplinary Courses.

Course Distribution for Students in the Fourth Year of KUFYUGP

*(i) Three PG level core courses (level 400 & above) in the Major discipline (for Honours); or (ii) Combination of Major core courses of level 400 & project up to 12 credits in the Major discipline (for Honours); or (iii) One 12-credit Research Project in the Major discipline (for Honours with Research) (iv) In the case of Honours students who go to another institution for doing the Project, the remaining Major core course can be in the online mode or in the in-person mode from the institution where the Project is being done. **AND** (i) Three Minor Pathway Courses of level 300 & above / level 400 & above; or (ii) Three Elective Courses in Major discipline of level 400 & above; or (iii) Two courses in Minor discipline + One course in Major / any other discipline; or (iv) Three Courses in any other discipline of level 300 & above / level 400 & above; or (v) Two courses in Major / Minor / any other discipline + One course in research methodology (vi) Two of these courses can be in the online mode. These online courses can be taken either in semester VII or in semester VIII, but their credits shall be added to the student's account only in semester VIII. (vii) For those students who go to another institution for doing the Project, all these three courses can be in the online mode or in the in-person mode from the institution where the Project is being done.*

KU2DSCFOR105 PRINCIPLES AND PRACTICE OF SILVICULTURE

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	DSC	100-199	KU2DSCFOR105	4	75

Learning Approach (Hours/ Week)			Marks Distribution- Theory			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	1		25	50	75	2
			Marks Distribution- Practical			
			10	15	25	

Course Description: The course "Principles and Practices of Silviculture" provides a comprehensive understanding of forestry principles, focusing on ecological processes, sustainable resource management, and biodiversity conservation. Students explore fundamental concepts such as the definitions of forests, forestry, and silviculture, alongside the objectives and scope of silviculture and its interrelation with other branches of forestry. Through the application of knowledge on silvicultural systems, students analyze forest management practices, assess site suitability for regeneration based on principles of tree growth and development, and engage in field techniques such as forest inventory and monitoring. Emphasizing sustainable forestry practices, the course fosters environmental stewardship and equips students to contribute to the advancement of forestry knowledge and practices, addressing global challenges including climate change.

Course Prerequisite:

Basic knowledge in Biology at 10th level, Ability to write examinations in English.

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
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1	Recall fundamental concepts of silviculture, including definitions of forests, forestry, and silviculture.	R
2	Explain the objectives and scope of silviculture and its relationship with other branches of forestry.	U
3	Apply knowledge of silvicultural systems to classify and analyze forest management practices.	A
4	Utilize principles of tree growth and development to assess site suitability for regeneration.	A

***Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)**

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2	✓				✓		
CO 3		✓	✓			✓	
CO 4		✓		✓		✓	

COURSE CONTENTS

Contents for Classroom Transaction:

M O D U L E	U N I T	DESCRIPTION	HOURS
1	MODULE TITLE: INTRODUCTION TO SILVICULTURE (20 Hours)		
	1	Silviculture	2

		a) Objectives	
		b) Scope	
	2	Relation with Other Branches of Forestry	1
	3	Silvics and Site Factors	3
		a) Climatic Factors	
		b) Edaphic Factors	
		c) Physiographic Factors	
		d) Biotic Factors	
		e) Interactions among Site Factors	
	4	TREE GROWTH AND DEVELOPMENT	4
		a) Trees and Their Distinguishing Features	
		b) Growth and Development of Trees	

2	MODULE TITLE: SILVICULTURAL SYSTEMS (20 Hours)		
	1	Definition, Scope, and Classification of Silvicultural Systems	3
	2	Systems of Concentrated Regeneration	3
		a) Clear Felling Systems	
		b) Shelterwood System	
	3	Systems of Diffused Regeneration	3
		a) Selection System and Its Modifications	
	4	Accessory Systems	6

	a) Coppice Systems	
	b) Culm Selection System in Bamboo	
	c) Canopy Lifting System in Andaman	

3	MODULE TITLE: REGENERATION OF FORESTS (20 Hours)		
	1	Objectives and Ecology of Regeneration	3
	2	Natural Regeneration Processes	5
		a) Seed Production	
		b) Seed Dispersal	
		c) Germination and Establishment	
		d) Requirements for Natural Regeneration	
		e) Advance Growth	
		f) Coppice and Root Sucker Regeneration	
		g) Regeneration Survey	
		h) Natural Regeneration Supplemented by Artificial Regeneration	
	3	Artificial Regeneration	7
		a) Objectives and Advantages of Artificial Regeneration	
		b) Factors Governing the Choice of Regeneration Techniques	

4	MODULE TITLE: TREE PLANTING AND CULTURAL OPERATIONS (10 Hours)		
	1	Tree Planting Techniques	3
		a) Sowing vs. Planting	

		b) Different Kinds of Pits	
	2	Tending and Cultural Operations	2
		a) Weeding (Kinds of Weeding)	
		b) Release Operations	
		c) Singling and Cleaning	
		d) Liberation Cutting	

	Teacher Specific Module (5 Hours)	5
	<i>Directions: This module is a list of suggested activities that helps to achieve the aim, objectives and outcome of the course; which will be determined by the concerned teacher. Assessment for this module is strictly internal.</i>	
5	<p>5.1 Visit a local forest or plantation to observe different silvicultural practices.</p> <p>5.2 Set up a small weather station to collect data on temperature, precipitation, humidity, and wind speed over a period of time.</p> <p>5.3 Identify and classify different silvicultural systems (clear felling, shelterwood, selection) in a local forest or through case studies.</p> <p>5.4 Visit a site where clear felling is practiced. Study the regeneration process and document the species regenerating naturally.</p> <p>5.5 Compare sites with natural regeneration and those with artificial regeneration techniques (e.g., planting, seeding). Evaluate the success and challenges of each method.</p> <p>Space to fill the selected area/ activity</p>	5

Essential Readings:

1. Günter, S., 2011. Introduction to silviculture in the tropics. In *Silviculture in the tropics* (pp. 3-10). Berlin, Heidelberg: Springer Berlin Heidelberg.
2. Khanna, L.S.1989. Principles and Practice of Silviculture. Khanna Bandhu, 7 Tilak Marg, Dehra Dun

3. Kozlowski, T.T., 1971. Growth and development of trees. Volume I: Seed germination, ontogeny and shoot growth. *Growth and development of trees. Volume I: Seed germination, ontogeny and shoot growth.*
4. Matthews, J.D., 1991. *Silvicultural systems*. Oxford University Press.
5. Duryea, M.L. and Dougherty, P.M., 1991. *Forest regeneration manual* (Vol. 36). Springer Science & Business Media.
6. Toumey, J.W. and Korstian, C.F., 1942. Seeding and planting in the practice of forestry. *Seeding and planting in the practice of forestry.*, (3rd ed.).
7. Evans, Julian, and John W Turnbull, 'Plantation maintenance', *Plantation Forestry in the Tropics: The Role, Silviculture, and Use of Planted Forests for Industrial, Social, Environmental, and Agroforestry Purposes* (Oxford, 2004; online edn, Oxford Academic, 31 Oct. 2023),

Reference Distribution:

Module	Unit	Reference No.
1	1	1
	2	2
	3	2
	4	3
2	1	4
	2	4
	3	4
	4	4
	5	4
3	1	5
	2	5
	3	5
4	1	6

	2	7
	3	7

Suggested Readings:

- Nyland, R. D. (2016). Silviculture: Concepts and Applications, Third Edition. Waveland Press, 680 pages
- Ram Parkash (1991). Theory and Practice of Silvicultural Systems International Books & Periodicals, Dehra Dun, 298 pages
- Smith, D.M. (1986). Practice of Silviculture, Edn 8. New York, John Wiley.

Evaluation Type – Theory		Marks
End Semester Evaluation		50
Continuous Evaluation		25
a)	Test Paper- 1	10
b)	Test Paper-2	10
c)	Assignment/Seminar/ Book/ Article Review/Field Report	3
d)	Viva-Voce	2
Total		75
Evaluation Type – Practical		Marks
End Semester Evaluation		15
Continuous Evaluation		10
a)	Test Paper	4
b)	Practical Record and Submissions	4
c)	Viva-Voce	2

Total	25
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Sample questions to Test Outcome

2 Mark Questions

1. Define silviculture and explain how it differs from general forestry.
2. Give general and ecological definitions of forest
3. Explain the term 'forestry' and describe its main components.
4. Discuss the primary objectives of silviculture.
5. How does silviculture contribute to sustainable forest management?

6 Mark Questions

1. Describe the scope of silviculture in modern forestry practices.
2. Explain the relationship between silviculture and forest ecology.
3. How does silviculture integrate with forest economics and policy?
4. Discuss the role of silviculture in forest conservation and biodiversity management.

14 Mark Questions

1. Define silvicultural systems and explain their importance in forest management.
2. Compare and contrast the clear felling system and the shelterwood system.
3. Explain the selection system of diffused regeneration and its advantages.
4. What are the key characteristics of the coppice system, and where is it commonly used?
5. Analyze the culm selection system in bamboo and discuss its benefits for sustainable management.

Employability for the Course:

- Forest managers
- Silviculturists
- Ecological restoration specialists
- Forest ecologists
- Wildlife biologists
- Environmental planners.

KU2DSCFOR106 FOREST BOTANY

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	DSC	100-199	KU2DSCFOR106	4	75

Learning Approach (Hours/ Week)			Marks Distribution- Theory			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	1		25	50	75	2
			Marks Distribution- Practical			
			10	15	25	

Course Description: This course offers a comprehensive study of plant taxonomy, focusing on the classification, identification, and nomenclature of plants. Students will learn about the morphological characteristics, evolutionary relationships, and ecological significance of plants. Fieldwork and laboratory sessions will provide hands-on experience in identifying and classifying plants.

Course Prerequisite:

- Basic understanding of botany or plant science

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Recall and define basic concepts and terminology related to plant taxonomy, such as taxonomic hierarchy, species, and botanical nomenclature.	R
2	Demonstrate understanding by explaining the principles of plant classification and the significance of morphological characteristics in identifying plant species.	U
3	Apply their knowledge to identify plant species using taxonomic keys and field guides during field trips and laboratory exercises.	A
4	Create herbarium specimens and comprehensive documentation for plant species they have identified, integrating morphological data.	C

***Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)**

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2	✓			✓			
CO 3			✓	✓			
CO 4				✓		✓	

COURSE CONTENTS**Contents for Classroom Transaction:**

M O D U L E	U N I T	DESCRIPTION
1	MODULE TITLE: INTRODUCTION TO PLANT BIOLOGY (10 Hours)	
	1	External plant morphology- Vegetative characters
		a) Root types and functions
		b) Stems – functions and branching pattern
		c) Leaves – Parts, Form and Phyllotaxy
	2	External plant morphology- Reproductive characters
		a) Flowers - Unisexual and bisexual, symmetry
		b) Fruits – Simple, Aggregate and Multiple
		c) Seeds – Monocot and dicot
	3	Classification of Plant Life Forms
		a) Herbs
		b) Shrubs
		c) Trees
		d) Other forms
2	MODULE TITLE: INTRODUCTION TO PLANT TAXONOMY (15 Hours)	
	1	Definition and significance of taxonomy
	2	History and development of plant taxonomy

	3	Principles of classification
	4	Nomenclature and binomial system
	MODULE TITLE: PLANT IDENTIFICATION TECHNIQUES (15 Hours)	
	1	Morphological characteristics of plants
	2	Reproductive characteristics of plants
		a) Salient features and Parts of the Flower- Bract, Calyx, Corolla, Androecium, Gynoecium
		b) Floral arrangement- types
		c) Relative position, cohesion, adhesion, Symmetry of flower
		d) Aestivation
		e) Placentation- types
		f) Inflorescence: Racemose, Cymose, Special type and Mixed types
	3	Use of dichotomous keys
	4	Herbarium techniques
	5	Modern tools in plant identification
	MODULE TITLE: ECONOMIC BOTANY (5 Hours)	
	1	Economic importance of common trees
		a) Timber
		b) NTFP
	2	Phytogeography
		a) Factors affecting plant distribution
		b) Phytogeographic zones of India

	Teacher Specific Module (30 Hours)
	<i>Directions: This module is a list of suggested activities that helps to achieve the aim, objectives, and outcome of the course; which will be determined by the concerned teacher. Assessment for this module is strictly internal.</i>
5	<p>5.1 Conduct a Field trip to collect plant specimens</p> <p>5.2 Use of dichotomous keys for plant identification</p> <p>5.3 Techniques for pressing, drying, and mounting plant specimens</p> <p>5.4 Labelling and cataloguing herbarium sheets</p> <p>5.6 Preparation of Plant identification charts</p> <p>5.7 Collection and Identification of Non-Timber Forest Products in Kerala</p> <p>Space to fill the selected area/ activity</p>

Essential Readings:

1. Kaplan, D.R., 2001. The science of plant morphology: definition, history, and role in modern biology. *American journal of botany*, 88(10), pp.1711-1741.
2. Waller, D.M., 1988. Plant morphology and reproduction. *Plant reproductive ecology: patterns and strategies*, pp.203-227.
3. Lawrence, G.H., 1955. *An introduction to plant taxonomy*. Central Book Depot.
4. Backlund, A. and Bremer, K., 1998. To be or not to be. Principles of classification and monotypic plant families. *Taxon*, 47(2), pp.391-400.
5. Roseline, A., 2019. *Botanical nomenclature*. MJP Publisher.
6. Foster, A.S. and Gifford, E.M., 1959. Comparative morphology of vascular plants. *Comparative morphology of vascular plants*.
7. Waller, D.M., 1988. Plant morphology and reproduction. *Plant reproductive ecology: patterns and strategies*, pp.203-227.
8. Fisher, P.L., Houseal, A.K., Tuthill, D. and Shim, J., 2016. Lesson 6: Plant Identification and Dichotomous Keys.
9. Paul, P., Dhar, S., Chowdhury, M. and Das, D., 2020. *Herbarium technique: evolution from conventional to digitization*. Orange Books Publication.
10. Finger, A., Groß, J. and Zabel, J., 2022. Plant Identification in the 21st Century—What Possibilities Do Modern Identification Keys Offer for Biology Lessons. *Education Sciences*, 12(12), p.849.

11. Seth, M.K., 2003. Trees and their economic importance. *The Botanical Review*, 69(4), pp.321-376.

12. Croizat, L., 2013. *Manual of phytogeography: an account of plant-dispersal throughout the world*. Springer.

Reference Distribution:

Module	Unit	Reference No.
1	1	1
	2	2
	3	3
2	1	3
	2	3
	3	4
	4	5
3	1	6
	2	7
	3	8
	4	9
	5	10
4	1	11
	2	12

Suggested Readings:

- Sambamurthy, A. V. S. S. 2005. Taxonomy of Angiosperms. I.K International Pvt. Ltd. 892 p.
- Jeffrey, C. 1982. An Introduction to plant taxonomy. Allied publishers. 154p.
- Henry, A. N. and Chandrabose, M. 1980. An Aid to the International Code of Botanical Nomenclature. Today and Tomorrow printers and publishers. 100p.
- Johri, R. M and SnehLata. 2005. Taxonomy- 1 (Systematics and Morphology). Sonali Publications. 340 p

- Johri, R. M and SnehLata. 2005. Taxonomy- 2 (Polypetalae). Sonali Publications. 300 p
- Johri, R. M and SnehLata. 2005. Taxonomy- 3 (Gamopetalae). Sonali Publications. 190 p

Assessment Rubrics:

Evaluation Type – Theory		Marks
End Semester Evaluation		50
Continuous Evaluation		25
a)	Test Paper- 1	10
b)	Test Paper-2	10
c)	Assignment/Seminar/ Book/ Article Review/Field Report	3
d)	Viva-Voce	2
Total		75
Evaluation Type – Practical		Marks
End Semester Evaluation		15
Continuous Evaluation		10
a)	Test Paper	4
b)	Practical Record and Submissions	4
c)	Viva-Voce	2
Total		25

**Sample
Test
2 Mark**

1. Define the
2. What
- how is

**questions to
Outcome
Questions**

plant taxonomy and explain its significance in study of botany. is the taxonomic hierarchy, and it used to classify plants?

3. Explain

- the concept of species in botanical nomenclature.
- Describe the binomial system of nomenclature and its importance in plant taxonomy.
- What are the major taxonomic ranks in the hierarchical classification of plants?

6 Mark Questions

1. Discuss the history and development of plant taxonomy, highlighting key milestones.
2. Explain the principles of plant classification and their application in modern botany.
3. Describe the various types of root systems and their functions in plants.
4. What are the different branching patterns of stems, and how do they contribute to plant identification?
5. Explain the parts of a leaf and the different forms and phyllotaxy observed in plants.
6. Differentiate between unisexual and bisexual flowers, and explain the significance of floral symmetry.

14 Mark Questions

1. Explain the different types of placentation observed in plants.
2. Describe the various types of inflorescence (racemose, cymose, special, and mixed) and their significance in taxonomy.

Employability for the Course:

- Botanist
- Taxonomist
- Environmental Consultant

KU2DSCFOR107 FIELD ORNITHOLOGY AND BIRD WATCHING

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	DSC	100-199	KU2DSCFOR107	4	75

Learning Approach (Hours/ Week)			Marks Distribution- Theory			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	1		25	50	75	2
			Marks Distribution- Practical			
			10	15	25	

Course Description: This course delves into the captivating world of avian species, offering insights into their biology, behaviours, and habitats. Through a blend of theoretical knowledge and practical field experiences, students will develop skills in bird identification, observation, and conservation, fostering a deep appreciation for the diverse avifauna around them.

Course Prerequisite:

- Basic knowledge in Biology

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Identify various bird species using visual and auditory cues.	R
2	Explain the anatomical features and physiological functions of birds.	U
3	Analyze bird behaviors and their ecological significance.	A
4	Differentiate between similar bird species by analyzing key physical and behavioral characteristics.	E

***Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create ©**

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1				✓			
CO 2	✓						
CO 3	✓		✓				
CO 4				✓			
CO 5						✓	

COURSE CONTENTS

Contents for Classroom Transaction:

M O D U L E	U N I T	DESCRIPTION
1	MODULE TITLE: INTRODUCTION TO ORNITHOLOGY (15 Hours)	
	1	Ornithology
		a) Definition and scope
		b) Renowned ornithologists and their contribution.
	2	Characteristics of birds
	3	Importance of birds in ecosystems
2	MODULE TITLE: BIRD IDENTIFICATION TECHNIQUES (20 Hours)	
	1	Bird identification features
		a) Visual Identification
		b) Auditory identification
	2	Techniques for bird watching
		1. Principles of Bird Watching
		2. Bird Watching Equipment and Tools
		3. Techniques for Effective Bird Watching
	3	MODULE TITLE: HABITATS AND BEHAVIOUR (25 Hours)
1		Bird Habitats
		a) Types of Habitats
		b) Habitat Preferences

	2	Bird Activities
		a) Movement
		b) Feeding
		c) Nesting and Breeding
		d) Flocking and roosting
	3	Migration in Birds
		a) Types
		b) Causes
		c) Significance
4	MODULE TITLE: FIELD TECHNIQUES IN ORNITHOLOGY (10 Hours)	
	1	Field Study Methods
		a) Banding and Tagging
	2	Data Collection
	3	Citizen Science and Community Involvement
5	Teacher Specific Module (5 Hours)	
	<i>Directions: This module is a list of suggested activities that helps to achieve the aim, objectives and outcome of the course; which will be determined by the concerned teacher. Assessment for this module is strictly internal.</i>	
	5.1 Overview of binoculars, spotting scopes, and cameras.	
	5.2 Practice using field guides and bird identification apps.	
	5.3 Introduction to field notebooks and data recording techniques.	
	5.4 Guided bird watching session in a local area	
	5.5 Focus on identifying common local species.	
	5.6 Practice using field guides to confirm identifications.	
	5.7 Audio session for learning bird calls and songs.	

	<p>5.8 Field trip to a diverse range of habitats (forests, wetlands, grasslands).</p> <p>5.9 Habitat mapping and description exercises.</p> <p>5.10 Recording species observed in different habitats.</p> <p>5.11 Participation in a citizen science project such as eBird, the Christmas Bird Count, or a local bird survey.</p> <p>Space to fill the selected area/ activity</p>
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Essential Readings:

1. Morrison, M.L., Rodewald, A.D., Voelker, G., Colón, M.R. and Prather, J.F. eds., 2018. *Ornithology: foundation, analysis, and application*. JHU Press.
2. Mainwaring, M.C., 2017. Why birds matter: avian ecological function and ecosystem services. *The Condor: Ornithological Applications*, 119(2), pp.354-355.
3. Dunne, P., 2012. *The Art of Bird Identification: A Straightforward Approach to Putting a Name to the Bird*. Stackpole Books.
4. Dunne, P., 2003. *Pete Dunne on bird watching: The how-to, where-to, and when-to of birding*. Houghton Mifflin Harcourt.
5. Fuller, R.J. ed., 2012. *Birds and habitat: relationships in changing landscapes*. Cambridge University Press.
6. Wallace GJ and HD Mahan. 20015. An introduction to ornithology. Mc Million Publishing Company, New York.
7. Collias, N.E. and Collias, E.C., 2014. *Nest building and bird behavior* (Vol. 857). Princeton University Press.
8. Newton, I., 2023. *The migration ecology of birds*. Elsevier.
9. Ali, S., 1979. Bird study in India: its history and its importance. *India International Centre Quarterly*, 6(2), pp.127-139.
10. Shyamal, L., 2007. Opinion: Taking indian ornithology into the information age. *Indian Birds*, 3(4), pp.122-137.
11. Chandler, M., See, L., Copas, K., Bonde, A.M., López, B.C., Danielsen, F., Legind, J.K., Masinde, S., Miller-Rushing, A.J., Newman, G. and Rosemartin, A., 2017. Contribution of citizen science towards international biodiversity monitoring. *Biological conservation*, 213, pp.280-294.

Reference Distribution:

Module	Unit	Reference No.
1	1	1
	2	1
	3	2
2	1	3
	2	4
3	1	5
	2	6,7
	3	8
4	1	9
	2	10
	3	11

Suggested Readings:

1. Neelakantan, K.K. 1984. "Keralathile Pakshikal". Kerala Sahithya Academy, Thrissur. 584pp.
2. Grimmet, R. Inskipp T and Inskipp, I. 2000. Pocket Guide to the of Birds of Indian subcontinent. Christopher Helm series
3. Grimmet, R. Inskipp, T and Nameer, P.O. 2007. Birds of southern India, BNHS series.
4. Sashikumar C., Praveen J., Palot M. J. and Nameer P. O. 2012. Birds of Kerala – status and distribution. DC Books.

Assessment Rubrics:

Evaluation Type – Theory		Marks
End Semester Evaluation		50
Continuous Evaluation		25
a)	Test Paper- 1	10

b)	Test Paper-2	10
c)	Assignment/Seminar/ Book/ Article Review/Field Report	3
d)	Viva-Voce	2
Total		75

Evaluation Type – Practical		Marks
End Semester Evaluation		15
Continuous Evaluation		10
a)	Test Paper	4
b)	Practical Record and Submissions	4
c)	Viva-Voce	2
Total		25

Sample questions to Test Outcome

2 Mark Questions

1. Briefly explain the significance of Archaeopteryx in the evolution of birds.
2. Name two renowned ornithologists and describe one significant contribution from each.
3. List three key visual features used to identify birds.
4. What are the primary reasons birds migrate?

6 Mark Questions

1. Why are birds considered important indicators of environmental health?
2. How can bird calls and songs be used to identify species?

3. Describe three different types of habitats where birds are commonly found.

14 Mark Questions

1. What are the essential tools for bird watching, and why are they important?
2. Explain the significance of foraging behavior in birds.
3. What are the common methods used for conducting bird surveys?

Employability for the Course:

- Wildlife Biologist/Ornithologist
- Environmental Educator/Interpretive Guide
- Conservation Officer/Environmental Consultant
- Ecotourism Guide
- Research Technician/Field Assistant
- Citizen Science Coordinator

KU2MDCFOR108 WILDLIFE PHOTOGRAPHY

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	MDC	100-199	KU1MDCFOR108	3	45

Learning Approach (Hours/ Week)	Marks Distribution	Duration of
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Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	ESE (Hours)
3	0		25	50	75	1.5

Course Description: Wildlife Photography is a Skill Enhancement course aims in photography of wildlife and nature, and story-telling using visual tools. Through a blend of theoretical lectures, hands-on practical sessions, and immersive field trips, students learn the fundamentals of wildlife photography, mastering essential techniques such as composition, camera settings, and understanding animal behaviour. They explore the intricacies of capturing dynamic shots of birds, mammals, and macro subjects, guided by ethical principles and a deep appreciation for wildlife conservation.

Course Prerequisite: Nil

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Define and explain the principles of wildlife and nature photography, including camera settings, composition techniques, and ethical considerations.	U
2	Develop the knowledge and skills to capture well-exposed and composed photographs of wildlife and natural landscapes in various environmental conditions.	A
3	Analyze photographs to interpret wildlife behavior, habitat characteristics, and environmental relationships, identifying patterns and connections within the natural world.	An
4	Generate visually compelling narratives through photography that communicate stories, emotions, and concepts	C

***Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)**

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓			✓			
CO 2			✓	✓			
CO 3	✓			✓		✓	
CO 4					✓		✓

COURSE CONTENTS**Contents for Classroom Transaction:**

M O D U L E	U N I T	DESCRIPTION
1	MODULE TITLE: BASIC ELEMENTS OF WILDLIFE PHOTOGRAPHY (20 Hours)	
	1	Photography and overview of wildlife photography as a genre
	2	Essential gear and equipment for wildlife photography
	3	Workings of different kinds of cameras and lenses
	4	Use of light and speed for different kinds of photographs
		a) Motion photography
		b) Camera settings and exposure for wildlife Photography
2	MODULE TITLE: COMPOSING AN IMAGE (10 Hours)	
	1	Basic rules for composing good wildlife and nature photography
	2	Ethical considerations in wildlife photography
	3	Using photography as an effective tool for conservation story telling

		a) Storytelling and Portfolio Development
	4	Photography in research and conservation
3	MODULE TITLE: POST-PROCESSING AND IMAGE EDITING (20 Hours)	
	1	Introduction to post-processing software for wildlife photography
	2	Adjustments for exposure: techniques for fine-tuning exposure and brightness
	3	Color: understanding color correction and white balance adjustments
		a) Enhancing Contrast
		b) Sharpening techniques
	4	Preserving authenticity and ethical considerations in post-processing.
4	MODULE TITLE: ADVANCED FIELD TECHNIQUES AND SKILLS (20 Hours)	
	1	Mastering manual settings for challenging conditions
		a) Techniques for capturing fast-moving subjects
		b) Low-light photography
	2	Using remote cameras and drones for unique perspectives
	3	Developing a narrative through a series of images
	4	Selecting and curating images for a cohesive wildlife photography portfolio
5	Teacher Specific Module (5 Hours)	
	<i>Directions: This module is a list of suggested activities that helps to achieve the aim, objectives and outcome of the course; which will be determined by the concerned teacher. Assessment for this module is strictly internal.</i>	

Space to fill the selected
area/ activity

Essential Readings:

1. John and Barbara Gerlach. 2012. Digital Wildlife Photography. Routledge.
2. Excell, L. S. (2011). Wildlife Photography: From snapshots to great shots. Peachpit Press.
3. Parmenter, T. (1982). Wildlife and Nature Photography, by Michael Freeman. Croom Helm. London, £ 13.95. Oryx, 16(4).
4. Young, S. (2022). Wildlife Photography Fieldcraft. Pelagic Publishing Ltd.
5. Caruso, R. D., & Postel, G. C. (2002). Image editing with Adobe Photoshop 6.0. Radiographics, 22(4).
6. Mangelson, T. D. (2013). Images of Nature: The Photographs of Thomas D. Mangelson. Rizzoli International Publications.
7. Frost, J. (2018). Creating a Wildlife Photography Portfolio. Ammonite Press.

Reference Distribution:

Module	Unit	Reference No.
1	1	1
	2	1
	3	2
	4	2
2	1	3
	2	3
	3	4
	4	4
3	1	5
	2	5

4	3	5
	4	5
	1	6
	2	6
	3	7
	4	7

Suggested Readings:

- Prakesh, D. (2007). Basics Photography 02: Lighting (Vol. 2). AVA Publishing.
- Smith, J. (2020). The Positive and Negative Effects of Photography on Wildlife.
- Banek, C., & Banek, G. (2013). Learning to Photograph-Volume 1: Camera, Equipment, and Basic Photographic Techniques. Rocky Nook, Inc.

Assessment Rubrics:

Evaluation Type		Marks
End Semester Evaluation		50
Continuous Evaluation		25
a)	Test Paper- 1	10
b)	Test Paper-2	10
c)	Assignment/Seminar/ Book/ Article Review/Field Report	3
d)	Viva-Voce	2
Total		75

Sample questions to Outcome

Test

2 Mark Questions

1. How would you adjust your camera settings for photographing wildlife in a dense forest with low light?

2. What is an ethical consideration to keep in mind during post-processing?
3. Name two popular post-processing software programs and describe one key feature of each.

6 Mark Questions

1. What criteria should you consider when selecting images for a wildlife photography portfolio?
2. How can you develop a strong narrative through a series of wildlife photographs?
3. What are some techniques for successful low-light wildlife photography?
4. What is the best approach for tracking and capturing sharp images of fast-moving wildlife?
5. What is the purpose of sharpening in wildlife photography, and how should it be applied?

14 Mark Questions

1. Describe a scenario where using a drone could enhance wildlife photography.
2. Describe a technique for enhancing contrast in a wildlife photo without losing detail.
3. How can wildlife photography contribute to conservation efforts?