University of Kerala

Discipline	**ZOOLOGY**				
Course Code	**UK4VACZOO202**				
Course Title	**Bioeconomics and Ecotourism**				
Type of Course	**VAC**				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	0	3
Pre-requisites	Pass of Class XII				
Course Summary	The course provides an interdisciplinary exploration of the intersections between biology, economics, and tourism and understanding their significance in promoting sustainable use of natural resources and conservation of biodiversity. Students learn about the economic principles underlying the management of biological resources, including concepts such as supply and demand, externalities, market failures, and resource allocation. Students explore the practices of ecotourism as a conservation tool, and analyze case studies and examples from the Indian and Kerala context. Course discusses the current challenges and issues in bioeconomics and ecotourism, such as climate change, invasive species, over tourism, and socio-economic inequalities, and explores potential solutions and future directions for research and practice.				

Detailed Syllabus

Module	Unit	Content	45 hrs
I		**Basics of Bioeconomics**	**10**
	1.1	Bioeconomics-Definition, Concept and scope, Economic theories applied to biodiversity conservation; Key principles of Bioeconomics- Optimal resource management, Ecosystem goods (Tangible), Services (Intangible) and Externalities.	3
	1.2	Bioresource economics- Types- Natural resource economics (Tragedy of the commons and resource depletion, Property rights and common-pool resources), Fisheries Economics (Fisheries management and overfishing, Sustainable fisheries and marine conservation) and Forestry Economics (Timber harvesting and forest management). Economic valuation of forest ecosystem services, Sustainable forestry practices and certification-	2

		Brief description.	
	1.3	Ecosystem Services- Provisioning Services (Food, water, fuel and wood), Supporting services (Nutrient cycling, Soil formation, Primary production and habitat provision), Regulating Services (Climate regulation, Flood regulation and disease) and Cultural services (Aesthetic, recreational and recreational values).	3
	1.4	Externalities-Types (Positive, negative, Environment and Technological) and Implications (Market failure, Efficiency loss and Regulatory Interventions).	2
II	**Trends in Bioeconomics and Policies**		**8**
	2.1	Green Economy- Biotechnology based economics, Environmental economics and Ecological economics.	2
	2.2	Methods for assessing the economic value of biodiversity and ecosystem services- Standard market prizes, Benefit cost ratio, Net present value, Present value ratio.	2
	2.3	Green production and sustainable consumption, Ecological Footprint.	2
	2.4	Policy implications of economic valuation for biodiversity conservation in India. Resource use incentives and property rights, private, common and public property rights and limitations, defendable right to resources.	2
III	**Ecotourism and Sustainable Development**		**14**
	3.1	Definition, Scope and Principles of Ecotourism, Role of Ecotourism in conservation and sustainable development.	4
	3.2	Ecotourism planning and management strategies; Community-based ecotourism initiatives in India with special reference to Kerala.	4
	3.3	Major Ecotourism centres of Kerala - Kuruva, Thenmala, Gavi, Adavi and Ponmudi. **Related activity** –*Visit to Ecotourism centers and submit a short report with photos.*	6
IV	**Impacts of Ecotourism on Biodiversity and Communities**		**6**
	4.1	Impacts of ecotourism: Ecological (habitat disturbance, wildlife disturbance, pollution), Socio-cultural (Indigenous tourism, Cultural preservation, impacts of ecotourism on local communities); Economic (benefits and opportunities) and Environmental. **Related activity**-*Recording of Invasive species in the Ecotourist regions at the time of study visit.*	4
	4.2	Issues and Challenges- Invasive species, CO_2 emissions, water pollution, Biodiversity loss.	2
V	**Policies and Management for Sustainable Ecotourism**		**7**
	5.1	National and international policies and regulations governing ecotourism.	2

	5.2	Role of government agencies, NGOs and local communities in ecotourism management. Strategies for mitigating negative impacts and enhancing the benefits of ecotourism in India.	2
	5.3	Marketing Ecotourism- Definition, concepts and features: Brief account. **Related activity**-*Marketing of beneficial products from forest.*	3

References:

1. Ghate, R., and Ghate, P. (Eds.). (2017) Ecotourism in India: Experiences, Approaches, and Challenges. Springer.
2. John M Gowdy and Sabine O'Haro (1999) The Science of Managing Resources.
3. Karanth, K. K., and Madhusudan, M. D. (Eds.). (2002) Living with Wildlife: Wildlife Resource and Livelihoods in South Asia. Permanent Black.
4. Lars Ravensbeck, Niels Vestergaard and Jens Wustemann (2019) "Bioeconomic modelling and Valuation of Exploited Marine Ecosystem".
5. Nautiyal, S., Kaechele, H., & Rao, K. S. (Eds.). (2016) Transdisciplinary perspectives on Transitions to Sustainability. Springer.
6. Nyaupane, G. P., and Poudel, S. (Eds.). (2011) Community-Based Ecotourism: Perspectives and Case Studies. CABI.
7. World Tourism Organization (UNWTO) (2015) Global Report on Adventure Tourism. UNWTO.

Web Resources:

1. https://cedindia.org/
2. https://rtsoi.org/
3. https://indiabiodiversity.org/
4. https://www.moef.gov.in/
5. https://www.tourism.gov.in/

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Develop a foundational understanding of bioeconomics as an interdisciplinary field that integrates principles from biology and economics and able to analyze bioresource markets, including those for renewable resources.	U, An	PSO-1,2
CO-2	Understanding of the concept of ecosystem services, including provisioning, regulating, supporting, and cultural services and acquiring skills in economic valuation methods.	U, E	PSO-1,3
CO-3	Understanding of the latest trends and developments in bioeconomics and related policies and analyzing	U, An	PSO-1,2

	the impact of globalization, trade liberalization, and international agreements on bioeconomic sectors and policies.		
CO-4	Understand the principles and concepts of ecotourism.	U	PSO-1
CO-5	Engage in critical thinking exercises and problem-solving activities to analyse real-world ecotourism challenges, such as balancing conservation and economic development objectives, addressing social inequalities.	C, An	PSO-.2
CO-6	Identify positive impacts of ecotourism on biodiversity and communities and evaluate existing ecotourism policies, regulations, and management practices in addressing biodiversity and community impacts.	R, U, E	PSO-1,2,3

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Name of the Course: Bioeconomics and Ecotourism
Credits: 3:0:0 (Lecture: Tutorial: Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
1.	Develop a foundational understanding of bioeconomics as an interdisciplinary field that integrates principles from biology and economics and able to analyze bioresource markets, including those for renewable resources.	PO 1/ PSO-1,2	U, An	F, C	L	-
2.	Understanding of the concept of ecosystem services, including provisioning, regulating, supporting, and cultural services and acquiring skills in economic valuation methods.	PO 2/ PSO-1, PSO 3	U, E	P	L	-
3	Understanding of the latest trends and developments in bioeconomics and related policies and analysing the	PO 1/ PSO-1, PSO 2	U, An	F, C	L	-

	impact of globalization, trade liberalization, and international agreements on bioeconomic sectors and policies.					
4.	Understand the principles and concepts of ecotourism.	PO1/ PSO-1	U	P	L	-
5	Engage in critical thinking exercises and problem-solving activities to analyse real-world ecotourism challenges, such as balancing conservation and economic development objectives, addressing social inequalities.	PO1/PSO-2	C, An	F, C	L	--
6	Identify positive impacts of ecotourism on biodiversity and communities and evaluate existing ecotourism policies, regulations, and management practices in addressing biodiversity and community impacts.	PO2/ PSO-1, PSO 2, PSO 3	R, U, E	P	L	-

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Mapping of COs with PSOs and POs

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO 7**	**PO 8**
CO 1	1	2	-	-	-	-	2	-	-	-	-	-	-	--
CO 2	2	-	3	-	-	-	-	2	-	-	-	-	-	-
CO 3	3	2	1	-	-	-	3	-	-	-	-	-	-	-
CO	2	-	-	-	-	-	2	-	-	-	-	-	-	-

4														
CO 5	2	-	-	-	-	-	2	-	-	-	-	-	-	-
CO 6	2	1	3	-	-	-	-	3	-	-	-	-	--	-

Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

Assessment Rubrics:

Assignments / Seminar topics/Field study reports

1. Principles of bioeconomics
2. Economic impact assessment of a major ecotourism event
3. Make sustainable tourism marketing plan for a destination area or ecotourism enterprise
4. Prepare a report on the study of a selected resource, including its ecological characteristics, biodiversity, productivity, and socio-economic importance.
5. Environmental management measures to minimize the ecological footprint of ecotourism activities.
6. Major Ecotourism centres of Kerala.

7. Prepare a study report after visiting a nearby ecotourism centre.

Continuous and Comprehensive Assessment

1. Quiz / Debate
2. Assignment
3. Group Discussion
4. Seminar
5. Submission of report
6. Test

End Semester Assessment

1. Multiple Choice questions
2. Short answer questions
3. Essay questions

Mapping of COs to Assessment Rubrics:

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1	✓	✓		✓
CO 2	✓	✓		✓
CO 3	✓	✓		✓
CO 4		✓		✓
CO 5		✓		✓
CO 6		✓		