



University of Kerala

Discipline	BOTANY				
Course Code	UK3VACBOT201				
Course Title	GREEN INITIATIVES FOR SUSTAINABILITY				
Type of Course	VAC				
Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	03	03 Hours	-	-	03 Hours
Pre-requisites	No Pre-requisites				
Course Summary	Students will be able to learn about green initiatives, water and waste management & air pollution. Students will learn about energy management, Afforestation, and mangrove conservation. Students know about biodiversity documentation and green audits.				

Detailed Syllabus:

Module	Unit	Content	Hrs
I	Green Initiatives -Introduction		09
	1	Green initiatives - Scope and importance for sustainability, Green initiative strategies for schools and higher education institutes, UN Sustainable Development Goals- 2030	
	2	Gardens and Conservatories: Botanic gardens, Zoological gardens, Ponds, Aquariums, Field gene banks, Butterfly parks, orchards.	
	3	Sustainable Agriculture: Definition, Principles and practices, Biological control, Biofertilizers and Biopesticides, Composting, Vermiculture, Farm tourism.	
II	Water, Waste Management & Air Pollution		09
	4	Irrigation and Water Management: Natural sources of water, Hydrological cycle, Irrigation methods- drip irrigation, Sprinkler method, Water conservation water harvesting.	
	5	Waste Management: Sources of waste, Types-Biodegradable, non-biodegradable, waste minimization, Solid waste management - Collection, Storage, Transport and Disposal of Wastes. Waste management methods- Recycling, incineration, landfill, Importance of 3Rs in waste management.	
	6	Air Pollution Reduction: Sources of air pollution, Air pollutants, Greenhouse gases, greenhouse effect and global warming, carbon footprint, Carbon sequestration - Biological, Air pollution - Control measures	
	7	Swachh Bharath Abhiyan: Gandhian philosophy of Cleanliness, Hygiene & Sanitation, Different phases of the SBA and its evaluation, Citizens' Responsibilities, Role of Swachagrahi.	

III	Energy Management:		09
	8	Energy resources - Renewable and Non-renewable, Conventional - Thermal, Hydro, Nuclear fission, Non-conventional – Solar, Wind, Biomass, Energy from waste, Energy plantation.	
	9	Energy Audit – Types and Procedure, Energy Conservation Measures – Optimum performance of existing facilities, Energy Conservation opportunities in residential and commercial buildings-	
IV	Afforestation & Mangrove Conservation		09
	10	Afforestation: Techniques and practices, strategies- species selection, density and arrangement, Common plants for afforestation in Kerala, Agroforestry, Social forestry, Miyawaki forest.	
	11	Mangrove ecosystem – structure and function, floral and faunal diversity, mangroves and climate change, coastal defense, mangrove restoration, economic importance of mangroves.	
V	Biodiversity documentation & Green audit		09
	12	Biodiversity documentation: Assessment and monitoring of biodiversity, Methodology of assessment and analysis of different species groups, plant communities- Survey method, field study. Conservation strategies – In situ and Ex situ conservation, Peoples Biodiversity Register	
	13	Green Audit: Green Audit: Definition; Objectives; Scope, Coverage. GOI notification on Environmental Audit - Benefits to Industry. Reporting Environmental Audit Findings -Importance of Environmental Audit Reports to industry, the public, and the governments.	

Suggested Reading

1. Singh, M. P., Singh, J. K., & Mohanka, R. (2007). *Forest environment and biodiversity*. Daya Books.
2. Balooni, K., & Singh, K. (1994). *Role of NABARD in financing social forestry programmes including afforestation of wastelands in India*. Anand, India: Institute of Rural Management.
3. Mason, J. (2003). *Sustainable agriculture*. Landlinks Press.
4. Majumdar, D. K. (2001). *Irrigation water management: principles and practice*. PHI Learning Pvt. Ltd.
5. K R Gupta *Environmental Legislation in India* Atlantic Publishers & Dist, 2006 Atlantic Publishers & Dist, 2006
6. *Afforestation* M P Singh, B C Oraon, Narendra Prasad. APH Pub. Corp. 2011

Weblink

1. <https://www.britannica.com/science/ecology>
2. <https://plato.stanford.edu/entries/ecology>
3. <https://www.cpcb.nic.in/https://www.free-ebooks.net/envirormental-studies-academic>
4. <https://swachhbharatmission.gov.in/SBMCMS/about-us.Htm>

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Students will be able to understand the various aspect on afforestation, conservation and importance of trees for sustainable lifestyle.	U, R	PSO-5
CO-2	Students will be able detect the polluted sites, its major pollutants and recognize the need to mitigate pollution.	An, E	PSO-6
CO-3	Students will Identify and apply the basics of waste management towards sustainable development.	R, Ap	PSO-6
CO-4	The students will gain an understanding of the impact of energy on society, the need for sustainable energy various techniques of energy management and conservation and gained the basic ideas of conducting an energy audit.	U, An, Ap	PSO-5,9
CO-5	Students will be able to plan and execute species documentation field study and will be able to assist in the preparation of PBR and campus flora	Ap, E, C	PSO-6,7
CO-6	Students can develop attitudes toward research and undertake actions to execute green initiatives.	Ap, C	PSO-7,
CO-7	Students will be able to understand the significance of the Swachh Bharat Abhiyan, will gain the ability to analyze and predict the sanitation challenges of India, determine the link between sanitation and development, and contribute to the Swachh Bharat Abhiyan through real-time projects/fieldwork.	U, Ap, E	PSO-6

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

Name of the Course: Green initiatives for Sustainability

Credits: 3:0:0 (Lecture:Tutorial:Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
CO-1	1	6	U, r	F, C	L	
CO-2	2	6	An, E	C, M	L	
CO-3	3	5,9	R, Ap	C, P	L	

CO-4	4	6,7	U, An, Ap	F, C	L	
CO-5	5	7	Ap, E, C	P	L	
CO-6	6	6	Ap, C	M	L	
CO-7	7	6	U, Ap, E	F, C, M	L	

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

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

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	✓			
CO 7	✓			