RAFFLES UNIVERSITY

TEACHING PLAN: Environmental Studies and Disaster Management

SCHOOL: (SOAS) SCHOOL OF AGRICULTURAL SCINCES		**ACADEMIC SESSION: 2023 – 2024**	**FOR STUDENTS' BATCH: 2022-2026**	
1	**Course No.**	**AES-T-201**		
2	**Course Title**	**Environmental Studies and Disaster Management**		
3	**Credits**	**3(2+1)**		
4	**Learning Hours**	**Contact Hours** 72 **Assessment** 9 **Guided Study** 9 **Total hours** 90		
5	**Course Objective**	**1.** To gain the knowledge of scope and importance of multidisciplinary nature of environmental studies. **2.** To learn about the natural resources and its categories; renewable and non-renewable. **3.** To study about the concept of biodiversity and it's conservation **4.** To familiarize the students about the definition, causes, effects and control of environmental pollution. **5.** To aware the students about the meaning and nature of natural disasters.		
6	**Course Outcomes**	1. Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Interdisciplinary branches of environment and their scopes. 2. Concepts of natural resources, Food resources, mineral resources, Concept of non Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources. 3. Ecosystem Links between environmental components and their role and types of ecosystems. 4. Types of biodiversity, their values, depletion and conservation methods. 5. Basic Structure of atmosphere and their functions Current problems related issues context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, management, Basic knowledge about water recourses, current problems related issues, water born diseases, technologies of water treatment. 6. Composition of solid waste, sources of generation, collection and disposal methods of solid waste, recycling, reuse of wastes. 7. Urban problems related to energy, Water conservation, rain water harvesting, and watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion. 8. Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. 9. Meaning and nature of natural disasters, their types and effects and management.		
7	**Outline syllabus:**			

7.01	**Paper Code**	**Unit**	**Introduction**	**Page Numbers[1]**	**Lectures**
7.02	**AES-T-201**	**Unit I**	1. Multidisciplinary nature of environmental studies Definition, scope and importance. 2. Natural Resources: Renewable and non-renewable resources, Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of		**1** **2** **1** **1**

			surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non- renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.		**1** **1** **1** **2**
		Unit II	1. Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem. 2. Producers, consumers and decomposers, Energy flow in the ecosystem. 3. Ecological succession, Food chains, food webs and ecological pyramids. 4. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). 5. Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and bio-geographical classification of India. 6. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. 7. Biodiversity at global, National and local levels, India as a mega-diversity nation. 8. Hot-sports of biodiversity. 9. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. 10. Endangered and endemic species of India. 11. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity		**1** **2** **1** **2** **2** **1** **1** **1** **2** **1** **2**
		Unit III	1. Environmental Pollution: definition, cause, effects and control measures of: a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution, g. Nuclear hazards. 2. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. 3. Role of an individual in prevention of pollution. 4. Social Issues and the Environment: From Unsustainable to Sustainable development, 5. Urban problems related to energy, 6. Water conservation, rain water harvesting, watershed management. 7. Environmental ethics: Issues and possible		**2** **1** **1** **1** **1** **1** **1**

			solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust dies. 8. Wasteland reclamation. 9. Consumerism and waste products. 10. Environment Protection Act. 11. Air (Prevention and Control of Pollution) Act. 12. Water (Prevention and control of Pollution) Act. 13. Wildlife Protection Act. 14. Forest Conservation Act. 15. Issues involved in enforcement of environmental legislation. 16. Public awareness. 17. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. 18. Environment and human health: Human Rights, Value Education, HIV/AIDS. 19. Women and Child Welfare. 20. Role of Information Technology in Environment and human health		**1** **1** **1** **1** **1** **1** **1** **1** **1** **2** **2** **1** **1**
		Unit IV	1. Natural Disasters- Meaning and nature of natural disasters, their types and effects. 2. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, 3. Climatic change: global warming, Sea level rise, ozone depletion. 4. Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents. 5. Disaster Management- Effect to migrate natural disaster at national and global levels. 6. International strategy for disaster reduction. 7. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community –based organizations and media. 8. Central, state, district and local administration; Armed forces in disaster response. 9. Disaster response; Police and other organizations.		**1** **1** **1** **2** **1** **1** **2** **1** **1**

8	**Course Evaluation**	
8.1	**CA: 10%**	
8.1.1	**Attendance**	25 %
8.1.2	**Homework**	2 Assignments, 50%
8.1.3	**Quizzes**	2 Quizzes, 25%
8.1.4	**Projects**	-
8.1.5	**Presentation**	-
8.1.6	**Any other**	Practical Examination- 30%
8.2	**MTE**	10%
8.3	**End-term examination: 50%**	
9	**Text Books & References**	
9.1	**Text book**	1.
9.2	**References**	**1.**
9.3	**Video References**	1.

Outcome no. → Syllabus topic↓	1	2	3	4	5
Paper Code.Unit I (1)			✓		
Paper Code. Unit I (2)			✓		
Paper Code.Unit II (1)			✓		
Paper Code. Unit II(2)			✓		
Paper Code. Unit II(3)			✓		
Paper Code.Unit II (4)			✓		
Paper Code.Unit II (5)			✓		
Paper Code. Unit II(6)			✓		
Paper Code. Unit II(7)			✓		
Paper Code.Unit II (8)			✓		
Paper Code.Unit II (9)			✓		
Paper Code. Unit II(10)			✓		
Paper Code. Unit II(11)			✓		
Paper Code.Unit III (1)			✓		
Paper Code.Unit III (2)			✓		
Paper Code.Unit III (3)			✓		
Paper Code.Unit III (4)			✓		
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Paper Code.Unit IV (1)			✓		
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Paper Code.Unit IV (8)			✓		
Paper Code.Unit IV (9)			✓		

QUESTION BANK

Section A

UNIT-I

1. Describe food resources and world food problems.
2. Define food chain and food web with examples.
3. Describe energy resources and its classification.
4. Summaries ecosystem structure and functions.
5. Define Environmental science, its scope and importance.
6. Explain biodiversity and its types.
7. Describe biodiversity values in environmental science.
8. List out hotspot of biodiversity in India. State the major threats to biodiversity.
9. Define global warming and write down its causes.
10. Explain briefly about solid waste management.
11. Explain with a short note on waste minimization control measures.
12. Explain Air (Prevention and Control of pollution) Act.
13. Summaries briefly Water (Prevention and Control of Pollution) Act.
14. Explain Wildlife (protection) Act.
15. Describe wasteland and write down the methods of wasteland reclamation.
16. Describe Forest (Conservation) Act briefly.
17. Differentiate between natural and manmade disasters along with examples.
18. Describe manmade disaster-accidents and analyses their effects.
19. Interpret reasons of climate change and measures to manage it.
20. Briefly describe global warming and ozone depletion.
21. Explain briefly about Floods, Earthquake and draught.

Section: II

1. Classify natural resources and enlist the problems associated with it.
2. Differentiate forest and grassland ecosystem, write down its application.
3. Compare desert and aquatic ecosystem, their characteristics and function.
4. Analyze the importance of mineral and land resources and environmental impacts of mineral extraction.
5. Discuss water ecosystem, write down its functions and also enlist benefits and problems associated with dams.
6. Explain ecological pyramids and their types.
7. Briefly explain dessert ecosystem, its significance and effects of deforestation.
8. Discuss greenhouse effect and write down its causes and preventive measures.
9. Compare air and thermal pollution and write down its causes and control measures.
10. Describe environmental ethics. Analyse issues related to it with possible solutions.
11. Explain environmental pollution and write down its causes and effects.
12. Define water and soil pollution and write down its effects and control measures.
13. Summaries the role of individual in prevention of pollution.
14. Give a detailed description about Environmental Protection Act.
15. Give a detailed description about women and child welfare programmes.
16. Briefly explain all acts related to environment and wildlife protection.
17. Measures the roles of information technology in environment and human health.
18. Briefly explain AIDS, its causes and control measures.
19. Design the roles of government and NGOs in disaster management.
20. Explain in detail about nuclear disasters, chemical disasters and biological disasters.
21. Explain natural disasters and write down their types and effects.
22. Define disaster and briefly explain various types of disasters.
23. Discuss about manmade disasters and write down their types and effects.