ENVIRONMENTAL STUDIES
COMPULSORY COURSE

Total Contact Hours: **40**	Course Credits: **2**
No. of Teaching Hours/week: **3**	Duration of ESA/Exam: **2** Hours
Formative Assessment Marks: **10**	Semester -End Assessment Marks: **40**

Preamble:

The course on "Environmental Studies" aims to provide a comprehensive understanding of the interrelationship between the natural world and human activities. It covers fundamental concepts, from ecosystem dynamics to biodiversity, emphasizing their significance and the threats they face. Additionally, the course delves into natural resources, environmental pollution, and pressing environmental problems. It also addresses policies, laws, and movements geared towards environmental studies, and emphasizes the role of individuals and communities in protecting our planet. This structured approach ensures that students gain theoretical insights and are actively engaged in environmental studies efforts.

The Hon'ble Supreme Court of India ruled that Article 21, guaranteeing the "right to life," includes the "right to a healthy environment," and in a 2003 order, enforced a 1991 decision mandating environmental studies as a compulsory subject at all educational levels. This decision aligns with the fundamental duties of citizens to "protect and improve the natural environment" as outlined in the Indian Constitution.

This module, comprising 3 units and 28 classroom-based lecture hours, aims to create awareness, enhance knowledge, and develop the skills and attitudes necessary to comprehensively understand the environment. It empowers students to proactively engage in environmental conservation and protection efforts.

Course Objectives:

1. To make students realize the importance of a healthy environment and understand the various aspects of ecosystems.
2. To enable students to grasp the significance and issues related to biodiversity and natural resources, and ways of conservation.
3. To enable students to have a nuanced understanding of environmental pollution, solid waste management and climate change and to act with concern on environmental issues.
4. To raise awareness of environmental policies and conservation efforts, and encourage public awareness and individual roles in protecting the environment through sustainable practices.

Course Outcomes (CO):

Upon successful completion of the course, students will be able to:

CO 1. **Understand Environmental Significance:** Comprehend the critical importance of the environment in our lives and gain a thorough understanding of various aspects of ecosystems.

CO 2. **Engage in Conservation Efforts:** Develop confidence and skills to actively participate in the conservation of water, soil, and biodiversity.

Mitigate Climate Change and Pollution: Initiate and adopt eco-friendly practices in daily life to contribute to climate change mitigation and pollution prevention.

CO 3. **Promote Sustainable Development:** Acquire knowledge about sustainable development and learn how to contribute effectively to the nation's progress.

CO 4. **Appreciate concerns of environmental movements:** Become aware and appreciate the values and concerns of environmental movements and policies; and act responsibly on environment-related issues.

ENVIRONMENTAL STUDIES

	Contents	Hrs.
Unit - 1	**Environment and Biodiversity** ➢ Environment: definition, ecosystem, types- terrestrial ecosystem (Forest) and aquatic ecosystem (Pond). Components of ecosystem- biotic and abiotic, food chains, food webs, energy flow in an ecosystem. – 2hrs. ➢ Biodiversity: definition, levels of biological diversity - genetic, species and ecosystem diversity. – 1hr. ➢ Importance of Biodiversity- Ecological and economic. - 1hr. ➢ Biodiversity Hotspots- definition, biodiversity hotspots of India (names and salient features only). Endangered and Endemic species of Western Ghats; IUCN Red List (a brief account) – 1hr. ➢ Threats to Biodiversity: Habitat loss, poaching of wildlife, biological invasions, mining and dam construction. Conservation of biodiversity: In-situ (National parks, Wildlife sanctuary, Biosphere reserves, Sacred grooves), and Ex-situ conservation-(Botanical gardens, Zoological Garden, Seed bank, Gene bank). - 2hrs ➢ Mangrove ecosystem- definition, threats and conservation. – 1 hr.	**10**
Unit - 2	**Natural resources and Environmental Pollution** ➢ Natural Resources: definition, types – renewable, non-renewable (definition and examples). – 1 hr. ➢ Forest Resources: uses, over exploitation- deforestation, timber extraction, mining. Afforestation, Reforestation – 1 hr. ➢ Water Resources: uses, over-utilization of surface and ground water, conflicts over water. Rain-water harvesting: definition, types (surface, roof top), significance. – 2 hrs. ➢ Energy Resources: Conventional sources (oils, coal, natural gas, electricity), non-conventional sources- (Solar, Wind, tidal, biofuel, nuclear energy).- 2hr ➢ Environmental Pollution: Air, water and soil pollution- causes, effects and controls. 3 hrs. ➢ Plastic pollution and its impact on human health and animals. – 1 hr.	**10**

Unit - 3	**Environmental Issues and Policies** ➢ Environmental Problems: Climate change, global warming, ozone layer depletion, acid rain, and human-wildlife conflicts. -2 hrs. ➢ Solid Waste Management: types (domestic and industrial), sources, collection and segregation, transport, process (landfill, incineration, composting, recycling). – 2 hrs. ➢ Environment Laws: Wildlife (Protection) Act-1972, Forest Conservation Act-1980, Biodiversity Act-2002. International agreements: Montreal and Kyoto protocols. -2 hrs. ➢ Environmental Movements and Contribution: Chipko, Appiko and Bishnois of Rajasthan, Narmada Bachao, Salumarada Thimmakka.- 2 hrs. ➢ Environmental Protection and Public Awareness. Role of individuals in environment conservation, the 4Rs' (reduce, reuse, recycle, recover). Important Days: World Environmental Day; World Wildlife Day; International Mother Earth Day; World Water Day; World Soil Day. Sustainable Development Goals. - 2 hrs.	**10**
	Field visit/activity* (chose any one or few of them depending upon the feasibility) : ➢ Visit to nearby vermicomposting unit/ waste processing unit/ Botanical Garden/ forest/ Zoo/ estuary/ mangrove. ➢ Participate in beach cleaning, the Swachh Bharat Mission, Vana Mahotsava, or seed ball preparation and dispersal. ➢ Create products from waste materials ("waste to treasure") ➢ Engage in a debate on environmental protection, policy, or conservation. ➢ List eco-friendly practices for daily life, adopt them, and report on their implementation.	**10**

References:

1. Allaby, M. (2002). Basics of Environmental Science. Routledge.
2. Chopra, K. (2017). Development and Environmental Policy in India: The Last Few Decades. Springer Singapore.
3. Divan, S., & Rosencranz, A. (2022). Environmental law and policy in India: Cases and materials. Oxford University Press.
4. Fisher, M. H. (2018). An Environmental History of India: From Earliest Times to the Twenty-First Century (Vol. 18). Cambridge University Press.
5. Ghosh, A. (2008). Environmental Conservation: Challenges & Actions. APH Publishing.
6. Joseph, B. (2018). Environmental Studies. McGraw Hill Education.

7. Khanna, R., Bhutiani, R., & Matta, G. (2023). Biodiversity Conservation & Environmental Management. Biotech Books.
8. Vinayaka, K. S., Siddaraju, M. N., & Kiran. (2023). Environmental Studies. United Agencies, Mangalore.

Pattern of Examination:

Internal Assessment	Semester End Examination	Total
10 marks	40 marks	50 marks

Final Examination Question Paper Pattern (Short answer and essay type)

Section - A (5 questions x 2 marks = 10 marks) – 5 questions out of 7

Section - B (6 questions x 5 marks = 30 marks) – 6 questions out of 8

Duration of the examination: 2 hours

Teaching hours and credits: 3 hours of teaching per week and 2 credits.

Semester End Examination - Model Question Paper

Section - A

Answer any **FIVE** of the following: **(5 x 2 = 10)**

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

Section - B

Answer any **SIX** of the following: **(6 x 5 = 30)**

8.
9.
10.
11.
12.
13.
14.
15.

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