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| Semester  | I   |
| Course <sup>*1</sup>  | Value - Added   |
| Paper Title   | ENVIRONMENTAL EDUCATION I (V1EE230111T)   |
| No. of Credits <sup>*2</sup>                                      | 2   |
| Theory / Practical / Composite                                    | Theory  |
| Minimum No. of preparatory hours per week a student has to devote | 2 h   |
| Number of Modules   | 4   |
| Syllabus  | <p><b>1. Introduction to Environment</b></p> <ul style="list-style-type: none"> <li>• Multidisciplinary nature of environmental studies; Scope and importance; the need for environmental education; environmental ethics.</li> <li>• Ecology and environment, ecosystem, components of environment, food chains, food web and functions of ecosystem, energy flow in an ecosystem, ecological pyramid</li> <li>• Concept and classification of biomes, biogeochemical cycles, ecosystem preservation.</li> </ul> <p><b>2. Global environmental issues and environmental pollution</b></p> <ul style="list-style-type: none"> <li>• Environmental pollution: definition, sources, causes, impacts, remedial measures; air, water, soil, noise and radiation pollution</li> <li>• Solid Waste Management- Control measures of urban and industrial waste, Waste segregation, E-waste, Biomedical waste</li> <li>• Pollution Case Studies: Delhi Air Pollution and public health issues, Ganga Action Plan, Bhopal Gas Tragedy</li> <li>• Stratospheric ozone depletion, El Nino, Acid rain.</li> <li>• Disasters and disaster management; Special reference to floods, earthquakes, cyclones, landslides</li> </ul> <p><b>3. Biodiversity and Conservation</b></p> <ul style="list-style-type: none"> <li>• Biodiversity: Definition, Levels of biodiversity, biogeographic zones of India, global biodiversity hotspots, Keystone species, Values of biodiversity. Endangered and endemic species of India, IUCN Red list criteria and categories</li> <li>• Threats to biodiversity: Habitat loss, poaching of wildlife, Conservation of biodiversity: In-situ and Ex-situ methods</li> <li>• Case Studies: Project Tiger, Deforestation in Amazon, Reintroduction of Asiatic Lions in Kuno</li> </ul> |

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|  | <p>National Park, India; reintroduction of Cheetah in India</p> <p><b>4. Climate Change, its impact and mitigation</b></p> <ul style="list-style-type: none"> <li>• Greenhouse effect, Global warming; Definition, scope and facts of climate change, Impacts of global climate change, Climate change adaptation and mitigation</li> <li>• National Action Plan on Climate Change (NAPCC), National Clean Air Programme (NCAP), The Net Zero Commitment</li> <li>• UN Initiatives and International Agreements: Montreal Protocol; UNFCCC and Kyoto Protocol (COP3), Paris Climate Summit</li> </ul>   |   |
| Learning Outcomes * <sup>3</sup>       | <ol style="list-style-type: none"> <li>1. Develop the basic knowledge of the environment</li> <li>2. Understand the role of environment in sustaining life</li> <li>3. Recognize the global environmental problems</li> <li>4. Understand the importance of forest and wildlife</li> <li>5. Develop the ability to apply multidisciplinary knowledge.</li> </ol>  |   |
| Reading/Reference Lists * <sup>4</sup> | <ol style="list-style-type: none"> <li>1. Mitra, A. K and Chakraborty, R., Introduction to Environmental Studies, Book Syndicate, 2016.</li> <li>2. Basu, M. and Xavier, S., Fundamentals of Environmental Studies, Cambridge University Press, 2016.</li> <li>3. Enger, E. and Smith, B., Environmental Science: A Study of Interrelationships, Publisher: McGraw-Hill Higher Education; 12th edition, 2010.</li> </ol> <p><b>Suggested readings:</b></p> <ol style="list-style-type: none"> <li>1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.</li> <li>2. Gadgil, M., &amp; Guha, R. 1993. This Fissured Land: An Ecological History of India Univ. of California Press.</li> <li>3. Odum, E.P., Odum, H.T. &amp; Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.</li> <li>4. Pepper, I.L., Gerba, C.P. &amp; Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.</li> <li>5. Agrawal, K M, Sikdar, PK and Deb, SC, A Text book of Environment, Macmillan Publication, 2002.</li> <li>6. Richard T Wright, Environmental Science: Towards a Sustainable Future, Prentice-Hall Inc., 2008.</li> </ol> |   |
| Evaluation                             | <p>Theory</p> <p>CIA: 15</p> <p>20 (scaled down to 10)</p> <p>3 (Assignment)</p>  | <p>Practical (if applicable)</p> <p>CA: <b>NA</b></p> <p>Semester Exam: <b>NA</b></p> |

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|   | 2 (Attendance)<br>Semester Exam: 35  |  |
| Paper Structure for<br>Theory Semester Exam | <b>Full marks:35</b> <span style="float: right;"><b>Time: 1 h 30 mins</b></span><br>Paper: ENVIRONMENTAL EDUCATION<br><br>SECTION-A<br>20 MULTIPLE CHOICE QUESTIONS (20 X 0.5=10)<br><br>SECTION-B<br>SHORT ANSWER TYPE QUESTIONS:<br>10 OUT OF 12 QUESTIONS (10 X1 =10)<br><br>SECTION-C<br>LONG ANSWER TYPE QUESTIONS<br>3 OUT OF 6 QUESTIONS (3 X5= 15) |  |