


**FIRST-YEAR DIPLOMA TEACHING & EXAMINATION SCHEME WITH SYLLABUS**

Semester: 2nd

Course Code: 002296204

Type of Course: AU-1

Course name: Environmental Science

**Course Prerequisites:** The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- Adopt the sustainable practices to resolve the environment related issues.

**TEACHING & EXAMINATION SCHEME:**

Teaching Scheme (Hrs/Week)				Examination Scheme					
Theory	Tutorial	Practical	Credit	SEE		CA			Total
				Th	Pr	MSE	PLE	LA	
3	0	0	0	00	00	00	25	25	50

**COURSE OBJECTIVE(S):**

For a country to progress, sustainable development is one of the key factors. Environment conservation and hazard management is of much importance to every citizen of India. Considerable amount of energy is being wasted. Energy saved is energy produced. Environmental pollution is on the rise due to rampant industrial mismanagement and indiscipline. Renewable energy is one of the answers to the energy crisis and also to reduce environmental pollution. Therefore this course has been designed to develop a general awareness of these and related issues so that the every student will start acting as a responsible citizen to make the country and the world a better place to live in.

**COURSE CONTENT(S):**

Module No.	Content	Hours	Weightage (%)
1	<b>Ecosystem</b> <ul style="list-style-type: none"> <li>• Structure and components of ecosystem</li> <li>• Types of Ecosystem, changes in ecosystem</li> <li>• Various natural cycles like carbon, Nitrogen, Sulphur, Phosphorus</li> <li>• Ecosystem conservation, carrying capacity of earth, Biomes in India, (ESA) Ecologically sensitive areas</li> <li>• Bio diversity, its need and importance, International Union for Conservation of Nature (IUCN) red list</li> <li>• Concept of Ecological foot print, virtual water, global ecological overshoot</li> </ul>	08	19%


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2	<b>Pollution and its types</b> <ul style="list-style-type: none"> <li>● Definition of pollution and pollutant</li> <li>● Air pollution, classification and its sources</li> <li>● Air pollution control Equipment's</li> <li>● Water pollution, pollution parameters like BOD, COD, pH, Total suspended solids, Turbidity, Total Solids</li> <li>● Waste water treatment like primary, secondary and tertiary</li> <li>● Solid waste generation, sources and characteristics of Municipal solid waste</li> <li>● Collection and disposal of Municipal waste and Hazardous waste</li> <li>● Noise pollution- its effects, sources and measurement</li> <li>● Plastic waste and its hazard</li> <li>● E waste and its hazard</li> </ul>	10	22%
3	<b>Renewable sources of energy</b> <ul style="list-style-type: none"> <li>● Need of Renewable energy and energy policy</li> <li>● Solar energy: National solar mission</li> <li>● Wind Energy: Growth of wind power in India</li> <li>● Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel</li> <li>● Anaerobic digestion, Biogas production mechanism, utilization and storage.</li> <li>● New energy sources: Geothermal energy, Ocean energy sources, Tidal energy conversion, Hydrogen energy</li> </ul>	10	22%
4	<b>Climate change</b> <ul style="list-style-type: none"> <li>● Definition of climate change</li> <li>● Global warming-causes, effect, process</li> <li>● Greenhouse effect</li> <li>● Ozone depletion</li> <li>● Factors affecting climate change</li> <li>● Impact and mitigation</li> <li>● Climate change management</li> </ul>	08	19%
5	<b>Environmental legislation and sustainable practices</b> <ul style="list-style-type: none"> <li>● Environmental policies in India</li> </ul>	06	18%



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	<ul style="list-style-type: none"> <li>● Air act, water act, Environment protection act, wild life protection act, Forest conservation act, Biodiversity act</li> <li>● Environmental management system: ISO 14000, definition and benefits</li> <li>● Rain water harvesting</li> <li>● Green building and rating system in India</li> <li>● Cradle to cradle concept and Life cycle analysis</li> <li>● Green label</li> <li>● Carbon credit system its advantages and disadvantages</li> <li>● Concept of 5R(Refuse, Reduce, Reuse, Repurpose, Recycle)</li> <li>● Eco tourism: advantages and disadvantages</li> </ul>		
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**Text Book(s):**

Title of the Book	Author(s)	Publication
Environment and Sustainable	Dr. R. P. Rethaliya Mayur R. Rethaliya Piyush R. Rethaliya	Atul Prakashan

**Reference Book(s):**

Title of the Book	Author(s)	Publication
Renewable Energy Technologies: A Practical Guide for Beginners	Solanki, Chetan Singh	PHI Learning, New Delhi, 2010 Print Book ISBN: 9788120334342 eBook ISBN: 9789354437151
Ecology and Control of the Natural Environment	Izrael, Y.A.	Kluwer Academic Publisher eBook ISBN: 978-94-011-3390-6 Softcover ISBN: 978-94-010-5499-7
Green Technologies and Environmental Sustainability	Singh, Ritu, Kumar, Sanjeev	Springer International Publishing, 2017 eBook ISBN 978-3-319-50654-8
Environmental Noise Pollution and Its Control	G.R. Chhatwal, M. Satake, M.C. Mehra, Mohan Katyal, T. Katyal, T. Nagahiro	Anmol Publications, New Delhi ISBN: 8170411378 ISBN: 8170411378
Wind Power Plants and Project Development	Earnest, Joshua & Wizelius, Tore	PHI Learning, New Delhi, 2011 ISBN-10: 8120351274 ISBN-13: 978-8120351271
Renewable Energy Sources and Emerging Technologies	Kothari, D.P. Singal, K.C., Ranjan, Rakesh	PHI Learning, New Delhi, 2009 ISBN-13 - 978-8120344709
Environmental Science and	Aloka Debi	University Press



**FIRST-YEAR DIPLOMA TEACHING & EXAMINATION SCHEME WITH SYLLABUS**

Engineering		ISBN: 9788173718113 ISBN-10: 8173716080 ISBN-13: 978-8173716089
Coping With Natural Hazards: Indian Context	K. S. Valadia	Orient Longman ISBN-10: 8125027351 ISBN-13: 978-8125027355
Introduction to Engineering and Environment	Edward S. Rubin	Mc Graw Hill Publications ISBN-10 : 0071181857 ISBN-13 : 978-0071181853

**Web Material Link(s):**

- [www.khanacademy](http://www.khanacademy)
- [http://www1.eere.energy.gov/wind/wind\\_animation.html](http://www1.eere.energy.gov/wind/wind_animation.html)
- [http://www.nrel.gov/learning/re\\_solar.html](http://www.nrel.gov/learning/re_solar.html)
- [http://www.nrel.gov/learning/re\\_biomass.html](http://www.nrel.gov/learning/re_biomass.html)
- <http://www.mnre.gov.in/schemes/grid-connected/biomass-powercogen/>
- <http://www.epa.gov/climatestudents/>
- <http://www.climatecentral.org>
- <http://www.envis.nic.in/>
- <https://www.overshootday.org/>
- <http://www.footprintcalculator.org/>
- <https://www.carbonfootprint.com/calculator.aspx>

**Equivalent/Corresponding Course on NPTEL (SWAYAM):**

NPTEL course on : [www.nptel.iitm.ac.in](http://www.nptel.iitm.ac.in)

**COURSE EVALUATION:**

R Level	U Level	A Level	N Level	E Level	C Level
22%	38%	40%	0	0	0

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate  
C: Create and above Levels (Revised Bloom's Taxonomy)**

**COURSE OUTCOMES: (Limited it to 4 to 6)**

Sr. No.	CO Statement
CO-1	Adopt relevant ecofriendly product in the given situation to protect ecosystem
CO-2	Use relevant method of pollution reduction in the given situation



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CO-3	Use of renewable resources of energy for sustainable development
CO-4	Use the relevant techniques in given context to reduce impact due to climate change
CO-5	Use relevant laws and policies for developing the sustainable environmental development