LOK JAGRUTI UNIVERSITY (LJU)

INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Civil Engineering (709)

Bachelor of Engineering (B.E.) – Semester – II

Course Code:	**01709829**
Course Name:	**Environmental Science**
Category of Course:	Mandatory Course (MC)
Prerequisite Course:	---

Teaching Scheme				
Lecture (L)	**Tutorial (T)**	**Practical (P)**	**Credit**	**Total Hours**
2	**0**	**0**	**0**	**20**

Syllabus

Unit No.	Topic	Prerequisite Topic	Successive Topic	Teaching Hours
01	**Introduction to Environment**			**1 (5%)**
	1.1 Definition, principles and scope of Environmental Science	---	---	
	1.2 Impacts of technology on Environment, Environmental Degradation,	---	---	
	1.3 Importance for different engineering disciplines	---	---	
02	**Water Pollution**			**2 (10%)**
	2.1Introduction – Water Quality Standards	---	Quality of Water (017093504 - Unit-3)	
	2.2 Sources of Water Pollution	---	---	
	2.3 Classification of water pollutants	---	---	
	2.4 Effects of water pollutants	---	---	
03	**Air Pollution**			**2 (10%)**
	3.1Composition of air	---	---	
	3.2 Structure of atmosphere	---	---	
	3.3 Ambient Air Quality Standards	---	---	
	3.4 Classification of air pollutants	---	---	
	3.5 Sources of common air pollutants like PM, SO2, NOX, Auto exhaust	---	---	
	3.6 Effects of common air pollutants	---	---	
04	**Noise Pollution**			**2 (10%)**
	4.1Introduction	---	---	
	4.2 Sound and Noise	---	---	
	4.3Noise measurements	---	---	
	4.4 Causes and Effects	---	---	
05	**Solid waste management**			**2 (10%)**
	5.1 Introduction	---	---	
	5.2 Types and Sources	---	---	
	5.3 Cause and Effect	---	---	
	5.4 Solid waste Management: Collection ,Processing ,Disposal	---	---	
06	**Biomedical waste management**			**2 (10%)**
	6.1 Introduction	---	---	
	6.2 Sources	---	---	
	6.3 Classification	---	---	
	6.4 Management: Segregation, Transportation, Treatment	---	---	
07	**Electronic Waste Management**			**2 (10%)**
	7.1 Introduction	---	---	
	7.2 Classification, Generation of Waste	---	---	
	7.3 International Trade or E-waste Dumping in Developing countries	---	---	
	7.4 Impacts of E-waste on Environment and Human Health	---	---	
	7.5 Management of E-waste	---	---	
08	**Global Environmental Issue**			**3 (15%)**
	8.1 Introduction	---	---	
	8.2 Climate Change	---	---	
	8.3 Greenhouse and Global Warming	---	---	
	8.4 Acid rain	---	---	
	8.5 Ozone Depletion	---	---	
	8.6 Carbon Foot Print	---	---	
	8.7 Benefits of Carbon foot prints	---	---	
	8.8 Cleaner Development Mechanism	---	---	
	8.9 International Steps for mitigation Global change	---	---	
09	**Green Technologies**			**2**

	9.1 Design	---	---	**(10%)**
	9.2 Operational Parameters	---	---	
	9.3 Maintenance	---	---	
	9.4 Solar Energy	---	---	
	9.5 Wind Energy	---	---	
	9.6 Biomass Energy	---	---	
10	**Social issues and Environment**			**2 (10%)**
	10.1 Unsustainable to Sustainable Development	---	---	
	10.2 Urban problems related to energy	---	---	
	10.3 Population Growth, Impact of Population, Gender and Environment	---	---	
	10.4 Role of individual to protect Environment	---	---	
	10.5 Role of information Technology to protect Environment and Human health	---	---	

Proposed Theory + Practical Evaluation Scheme by Academicians
(% Weightage Category Wise and it's Marks Distribution)

L:	2	T:	0	P:	0

Note: In Theory Group, Total 4 Test (T1+T2+T3+T4) will be conducted for each subject.
Each Test will be of 25 Marks.
Each Test Syllabus Weightage: Range should be 20% - 30%

Group (Theory or Practical)	Group (Theory or Practical) Credit	Total Subject Credit	Category	% Weightage	Marks Weightage
Theory	**0**	**0**	MCQ	100%	100
Theory			Theory Descriptive	0%	0
Theory			Formulas and Derivation	0%	0
Theory			Numerical	0%	0
Expected Theory %	**0%**		**Calculated Theory %**	**100%**	**100**
Practical	**0**		Individual Project	0%	0
Practical			Group Project	0%	0
Practical			Internal Practical Evaluation (IPE)	0%	0
Practical			Viva	0%	0
Practical			Seminar	0%	0
Expected Practical %	**0%**		**Calculated Practical %**	**0%**	**0**
Overall %	**0%**			**100%**	**100**

Course Outcome	
	Upon completion of the course students will be able to
CO1	Develop the ability to identify various types of pollution prevalent in society, comprehensively understanding their sources and the consequential impacts on both human health and the environment.
CO2	Acquire an in-depth understanding of different waste management strategies and their crucial significance in preserving both human health and the environment.
CO3	Understanding of various critical issue related to climate change, gaining insights into global initiatives and efforts aimed at addressing this critical environmental challenge.
CO4	Examine the role of eco-friendly technology in fostering sustainable development, considering both environmental and social implications.

Suggested Reference Books	
1	Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha Second edition, 2013 Publisher: Universities Press (India) Private Ltd, Hyderabad
2	Basics of Environmental Studies by U K Khare, 2011 Published by Tata McGraw Hill
3	Environmental Science by B.R Shah and Dr.Sneha Popli Mahajan Publication House
4	Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley & Sons.
5	De A.K., Environmental Chemistry, Wiley Eastern Ltd.
6	Agarwal, K.C.2001 Environmental Biology, Nidi Publ.Ltd.Bikane.
7	Renewable Energy and Technology by DR.P.Subrahmanian and DR.A.Sampatharajan

List of Open Source Software/Learning website	
1	https://www.coursera.org/browse/physical-science-and-engineering/environmental-science-and-sustainability
2	https://www.classcentral.com/course/swayam-environmental-pollution-and-global-issues-22968
3	https://www.edx.org/learn/renewable-energy
4	https://www.coursera.org/learn/solid-waste-management
5	https://www.udemy.com/course/basic-medicalbiomedical-waste-management-course/
6	https://onlinecourses.nptel.ac.in/noc20_ce12/preview