Lovely Professional University, Punjab

Course Code	Course Title	Lectures	Tutorials	Practicals	Credits	
CHE110	ENVIRONMENTAL STUDIES	2	2	0	4	
Course Weightage	ATT: 5 CA: 40 MTT: 20 ETT: 35					

Course Focus	EMPLOYABILITY,SKILL DEVELOPMENT

Course Outcomes :Through this course students should be able to

CO1 :: describe the current environmental issues and associated problems.

CO2 :: understand various environmental issues through basic knowledge of environment and its various components.

CO3 :: outline various environment policies and practices.

CO4 :: explore new approaches to reduce various types of environmental pollution.

	TextBooks (T)		
Sr No	**Title**	**Author**	**Publisher Name**
T-1	PERSPECTIVE IN ENVIRONMENTAL STUDIES	ANUBHA KAUSHIK, C P KAUSHIK	NEW AGE INTERNATIONAL PUBLISHERS

	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	TEXT BOOK OF ENVIRONMENTAL STUDIES 2E	D. DAVE AND S. S. KATEWA	CENGAGE LEARNING

Other Reading (OR)	
Sr No	**Journals articles as Compulsary reading (specific articles, complete reference)**
OR-1	http://collegesat.du.ac.in/UG/Envinromental%20Studies_ebook.pdf, ,
OR-2	http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool/ES3205_student_text_chapter_1.pdf , ,

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	http://www.nei.org/master-document-folder/backgrounders/fact-sheets/chernobyl-accident-and-its-consequences	Chernobyl Accident
RW-2	https://www.cbd.int/convention/	Convention on Biological Diversity
RW-3	https://www.bhopal.org/continuing-disaster/the-bhopal-gas-disaster/union-carbides-disaster/	Bhopal Gas Tragedy

RW-4	https://nmcg.nic.in/pollution.aspx	Ganga pollution
RW-5	http://pdf.usaid.gov/pdf_docs/PNAAT747.pdf	Silent Valley
RW-6	https://ecologise.in/2017/05/28/the-bishnois-indias-original-environmentalists-who-inspired-the-chipko-movement/	Bishnois of Rajasthan
RW-7	http://www.actionbioscience.org/environment/hinrichsen_robey.html	Human population and environment
RW-8	http://www.livescience.com/27692-deforestation.html	Deforestation
RW-9	https://www.conservation.org/priorities/biodiversity-hotspots	Biodiversity hot spot
RW-10	http://www2.dmu.dk/pub/fr741.pdf	Level of biodiversity
RW-11	http://edugreen.teri.res.in/explore/laws.htm	Environmental laws and regulations
RW-12	http://www.creationconcepts.org/resources/NUCLEAR.pdf	Nuclear Hazards (Effects & Control)
RW-13	http://www.yourownhealthandfitness.org/Documents/Hagler_Noise_pollution.pdf	Sources, effects of noise pollution, control measures of noise pollution
RW-14	http://www.buzzle.com/articles/causes-and-effects-of-land-pollution.html	Pollutants, different type of land pollutants, their origin and effects
RW-15	http://des.nh.gov/organization/commissioner/pip/factsheets/bb/documents/bb-3.pdf	Eutrophication, Biomagnification
RW-16	http://environment.about.com/od/environmentalevents/a/waterdayqa.htm	Water pollutants, sources of water pollution
RW-17	http://www.kankyo.metro.tokyo.jp/en/attachement/airpollution.pdf	Global warming, Smog, Control measures for air pollution
RW-18	http://idosi.org/wasj/wasj7%281%29/10.pdf	Green house effect, Acid rain, Depletion of ozone layer
RW-19	http://www.envirocomp.org/books/chapters/1aap.pdf	Primary and Secondary pollutants
RW-20	http://pdf.usaid.gov/pdf_docs/PNABW370.pdf	Modes of Biodiversity conservation
RW-21	http://www.cnrs.fr/inee/recherche/fichiers/Biodiversite_hotspots.pdf	Global Biodiversity Hot Spots
RW-22	http://www.oklaenvirothon.org/pdfs/wildlife/biodiversity.pdf	Levels of Biodiversity
RW-23	http://www.thewildclassroom.com/biomes/estuaries.html	Importance of deserts & estuaries
RW-24	Importance of deserts & estuaries	Ecological Succession
RW-25	https://www.biologyonline.com/dictionary/ecological-pyramid	Ecological pyramids
RW-26	https://www.nationalgeographic.org/encyclopedia/ecosystem/	Ecosystem
RW-27	http://www.im4change.org/docs/chhat_chap1-11-40.pdf	Natural resource
RW-28	http://www.un-documents.net/ocf-07.htm	Non-renewable resource
RW-29	ttp://www.oas.org/dsd/publications/Unit/oea79e/ch05.htm	Renewable resource

RW-30	http://www.newagepublishers.com/samplechapter/001426.pdf	Multidisciplinary nature of environment
RW-31	http://www.newagepublishers.com/samplechapter/000964.pdf	Basics of Environmental studies

Audio Visual Aids (AV)		
Sr No	**(AV aids) (only if relevant to the course)**	**Salient Features**
AV-1	https://www.youtube.com/watch?v=CebTVhzigOA	Public awareness
AV-2	https://www.youtube.com/watch?v=YIrKW6jXjdM	Environmental Conservation
AV-3	http://study.com/academy/lesson/comparing-life-centered-human-centered-environmental-ethics.html	Environmental ethics
AV-4	https://www.youtube.com/watch?v=fTznEIZRkLg	population growth
AV-5	https://www.youtube.com/watch?v=p1sG3DX-blI	Montreal Protocol Documentary
AV-6	https://www.youtube.com/watch?v=aXdmqXG3ITU	Basics of Kyoto Protocol
AV-7	https://www.youtube.com/watch?v=6U_4jX4engM	Forest conservation act
AV-8	https://www.youtube.com/watch?v=tYJOd-QYidc	Wild life conservation act
AV-9	https://www.youtube.com/watch?v=hPgBLOZ85Cw	Environment protection act
AV-10	https://www.youtube.com/watch?v=CTUOchYZG2k	Environment Laws
AV-11	https://www.youtube.com/watch?v=9aEx067YkD	Ozone layer depletion
AV-12	https://www.youtube.com/watch?v=61CNyFPdwO0	Acid rain and impacts on human communities and agriculture
AV-13	https://www.youtube.com/watch?v=3nx5yr2GnGk	Ill-effects of fireworks
AV-14	https://www.youtube.com/watch?v=yhWnrNQPwAs	Solid waste management: Control measures of urban and industrial waste
AV-15	https://www.youtube.com/watch?v=Xvz3jh7ujZg	Nuclear hazards. Cause, effect and control
AV-16	https://www.youtube.com/watch?v=KxlgRHf_7oA	Radioactive Pollution
AV-17	https://www.youtube.com/watch?v=-VaaTn_g1_k	Noise Pollution
AV-18	https://www.youtube.com/watch?v=00c4goQRLek	Soil Pollution
AV-19	https://www.youtube.com/watch?v=bTsxx1KZwlM	Water pollution
AV-20	https://www.youtube.com/watch?v=JZv3LOMiI9Q	Endangered and endemic species of India
AV-21	https://www.youtube.com/watch?v=zJyxOYfvIfA	Threats to biodiversity: Habitat loss
AV-22	https://www.youtube.com/watch?v=GK_vRtHJZu4	India as a mega diversity nation
AV-23	https://www.youtube.com/watch?v=VoS1-yOeEo4	Values of biodiversity
AV-24	https://www.youtube.com/watch?v=Jtuh368CW3c	Levels of biological diversity: genetic, species and ecosystem diversity
AV-25	https://www.youtube.com/watch?v=7tgNamjTRkk	What is biodiversity and why is it important
AV-26	https://www.youtube.com/watch?v=gB4UDHCvXMU	Grassland Ecosystem
AV-27	http://study.com/academy/lesson/aquatic-ecosystems-abiotic-factors.html	Aquatic Ecosystems

AV-28	https://www.youtube.com/watch?v=f8eCbwg-lik	Forest Ecosystem
AV-29	https://www.youtube.com/watch?v=Nbi4wW7ojXs	Desert Ecosystem
AV-30	http://study.com/academy/lesson/what-is-ecological-succession-definition-types-stages.html	Ecological succession
AV-31	http://study.com/academy/lesson/food-chains-trophic-levels-and-energy-flow-in-an-ecosystem.html	Food chains
AV-32	https://www.youtube.com/watch?v=f_x_saJEGiw	Energy recovery
AV-33	https://www.youtube.com/watch?v=auBFn-u9b6A	JK Energy Solutions Case Study
AV-34	https://www.youtube.com/watch?v=Da6DhVAeN9s	Case Studies in Municipal Energy Conservation
AV-35	https://www.youtube.com/watch?v=xP0MuoYnMl0	Case studies: India's-rising-energy-needs
AV-36	http://video.nationalgeographic.com/video/alternative-energy?source=relatedvideo	Use of alternate energy sources
AV-37	http://study.com/academy/lesson/renewable-non-renewable-resources-definition-differences.html	Non-renewable energy sources
AV-38	http://study.com/academy/lesson/what-is-a-renewable-energy-source-definition-example-quiz.html	Renewable Energy Source
AV-39	https://www.youtube.com/watch?v=m4WBbSv_N7U	Sources of water
AV-40	https://pmm.nasa.gov/education/videos/water-cycle-animation	Water cycle
AV-41	https://www.youtube.com/watch?v=kxqbpPWTl6A	Importance of water
AV-42	http://study.com/academy/lesson/soil-profile-definition-development-types.html	Soil profile
AV-43	http://study.com/academy/lesson/what-is-sustainable-forest-management-definition-and-examples.html	Control
AV-44	https://www.youtube.com/watch?v=eEFwaQej_0E	Sustainable Development
AV-45	https://www.youtube.com/watch?v=J4osIBchx7k	Importance of forests
AV-46	http://study.com/academy/lesson/what-are-natural-resources-definition-lesson-quiz.html	Classification of natural resources
AV-47	https://www.youtube.com/watch?v=_v8MEaejTok	Conflicts over water
AV-48	https://www.youtube.com/watch?v=Xo1Jyzba7rA	Droughts
AV-49	http://study.com/academy/lesson/what-are-floods-causes-types-prevention.html	Floods
AV-50	https://www.youtube.com/watch?v=n1gsyhuHGgc	Over-exploitation of surface and ground water
AV-51	https://www.youtube.com/watch?v=5lK_fs3p7yc	Use of surface and ground water
AV-52	https://www.youtube.com/watch?v=GK_vRtHJZu4	Biodiversity
AV-53	https://www.youtube.com/watch?v=a0S8iayJDhQ	Causes and impacts due to mining
AV-54	https://www.youtube.com/watch?v=gRJBuM7qjQ0	Desertification
AV-55	https://www.youtube.com/watch?v=iMy5-Npr69E	Land degradation
AV-56	https://www.youtube.com/watch?v=7G3eXI_DPn8	Introduction to Environmental Science

AV-57	https://www.youtube.com/watch?v=Sk5ELLPsD80	Introduction to Environmental Science
AV-58	https://www.youtube.com/watch?v=Sk5ELLPsD80	Environmental Science and Sustainability
AV-59	https://www.youtube.com/watch?v=wvP7474y8Jw	Sustainable Development

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture)	4

Detailed Plan For Lectures

Week Number	Lecture Number	Broad Topic(Sub Topic)	Chapters/Sections of Text/reference books	Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs	Lecture Description	Learning Outcomes	Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned	Live Examples

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Week 1	Lecture 1	Introduction and natural resources(multidisciplinary nature, scope and importance of environmental studies)	T-1 R-1	OR-1 OR-2 RW-30 RW-31 AV-44 AV-56 AV-57 AV-58 AV-59	Lecture-1: Zero lecture for the introduction to the course objectives, structure and details of academic tasks. Introduction to environment and its various components. Lecture2: multidisciplinary nature, scope and importance of environmental studies, concept of sustainability and sustainable development goal	To make students conversant with the course objectives and academic details. To instil in students the global empathy for saving the world from environmental destruction. Students will learn how environmental study is related to all other subjects and concept of sustainability and sustainable development.	Lecture delivery with discussion.	Medha Patkar, Maneka Gandhi, Anil Kumar Agarwal, Sunita narain, M S Swaminathan, Chandra Bhushan and many other renowned dignitaries and personages who have been treasured by distinguished awards in various disciplines now directing and managing centre for science and environment-India top NGO to analyses and study the relationship between environment and development and create public consciousness about the need for sustainable development.

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Week 1	Lecture 2	Introduction and natural resources(multidisciplinary nature, scope and importance of environmental studies)	T-1 R-1	OR-1 OR-2 RW-30 RW-31 AV-44 AV-56 AV-57 AV-58 AV-59	Lecture-1: Zero lecture for the introduction to the course objectives, structure and details of academic tasks. Introduction to environment and its various components. Lecture2: multidisciplinary nature, scope and importance of environmental studies, concept of sustainability and sustainable development goal	To make students conversant with the course objectives and academic details. To instil in students the global empathy for saving the world from environmental destruction. Students will learn how environmental study is related to all other subjects and concept of sustainability and sustainable development.	Lecture delivery with discussion.	Medha Patkar, Maneka Gandhi, Anil Kumar Agarwal, Sunita narain, M S Swaminathan, Chandra Bhushan and many other renowned dignitaries and personages who have been treasured by distinguished awards in various disciplines now directing and managing centre for science and environment-India top NGO to analyses and study the relationship between environment and development and create public consciousness about the need for sustainable development.
Week 2	Lecture 3	Introduction and natural resources(natural resources and classification)	T-1 R-1	RW-27 RW-28 RW-29 AV-42 AV-46 AV-54 AV-55	Natural resources and classification Land resource, soil profile, function of soil. Cause, effect and control methods of land degradation, soil erosion and desertification. After the lecture delivery, last 15 minutes is used to allotment of the assignment/term paper topics.	Student will learn about natural resources and land resource, soil erosion and its control methods, desertification.	Lecture delivery with ppt and discussion.	The effect of desertification in Northern Gujarat and expansion of deserts across globe.

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Week 2	Lecture 4	Introduction and natural resources(forest resources, causes and impacts of deforestation)	T-1 R-1	RW-8 AV-43 AV-45	Forest resource: Importance of forests: Direct and indirect benefits. Deforestation: causes, effect and control.	Students will learn about importance and benefits of forest, deforestation.	Lecture delivery with discussion and using videos related to deforestation.	Forest status of India and other countries and rate of deforestation across countries.
Week 3	Lecture 5	Introduction and natural resources(water resources, use and over-exploitation of surface and ground water, conflicts over water)	T-1 R-1	AV-39 AV-40 AV-41 AV-47 AV-50 AV-51	Water resource: Importance of water, Source of water, water cycle. ,over-exploitation of ground water. Water shortage and conflicts over water.	Students will learn about water resource and problems related to water availability and shortage.	Lecture delivery with discussion and using videos related to water problems.	Water stress countries, Drought in Kalahandi (Government induced drought), Save Ganga Movement, Ganga action plan. Eco-task force to check the Ganga pollution. Cherrapunji-Drinking the sky. Still unsettled Kaveri dispute.
	Lecture 6	Introduction and natural resources(energy resources, renewable and non renewable energy resources, use of alternate energy sources, growing energy needs)	T-1 R-1	AV-32 AV-33 AV-34 AV-35 AV-36 AV-37 AV-38	Energy Resources: Renewable and non-renewable energy resources. Use of alternative energy resource and limitations of alternative energy resource. Energy recovery. Growing energy need and problems related to energy.	Giving an idea of different renewable and non-renewable energy resources. Need of alternative energy resources.	Lecture delivery with discussion and using videos related to various sources of energy.	Solar energy flow as the single energy source that is perpetual and causes the flow of water and air currents that are renewable resources. Think about Petroleum and coal reserves of the world which are getting depleted rampantly-Fossil fuel reserves are non-renewable. Current development in alternative sources of energy

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Week 4	Lecture 7	Ecosystems(What is an ecosystem? structure and function of ecosystem)	T-1 R-1	RW-26 AV-26 AV-27 AV-28 AV-29	Lecture 7: conservation of natural resources and human role in conservation of renewable and non-renewable resources. Introduction and classification of ecosystem. Structure of ecosystem: biotic and abiotic components.	Students will learn about conservation strategies and role of human in natural resource conservation. Students will learn about concept ecosystem, classification, structure: biotic and abiotic.	Lecture delivery with videos, animations, and discussion.	Different types of ecosystem across world. Destruction of ecosystem of Sahara deserts. Destruction of ecosystem by taking example of Yamuna river.
	Lecture 8	Ecosystems(Energy flow in an ecosystem: food chains, food webs and ecological succession)	T-1 R-1	RW-24 RW-25 AV-30 AV-31	Function of ecosystem: food chain, food web, flow of energy. Concept of trophic level and ecological pyramids. Ecological succession: Types and process of succession	Students will learn about ecosystem, food chain, food web and flow of energy in ecosystem and process of ecological succession.	Lecture delivery with videos, animations, and discussion.	Food chain in different ecosystems. Succession on surface of rocks.
Week 5	Lecture 9	Ecosystems(Case studies of the following ecosystems : a)forest ecosystem b) grassland ecosystem c) desert ecosystem d) aquatic ecosystem)	T-1 R-1	RW-23 RW-26 AV-26 AV-27 AV-28 AV-29	Structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems: freshwater and marine water ecosystem.	Student will learn about structure, characteristics of different ecosystem on land and water.	Lecture delivery with videos, animations, and discussion.	Rivers, lakes and ocean as distinct ecosystem.
	Lecture 10	Biodiversity and conservation(Levels of biological diversity : genetic, species and ecosystem diversity)	T-1 R-1	RW-9 RW-10 RW-21 RW-22 AV-24 AV-25 AV-52	Introduction to biodiversity, types of biodiversity such as genetic, species and ecosystem diversity. Values of biodiversity. Biodiversity hot spots.	Students will learn about biodiversity and various types of biodiversity. Make student aware about the values of biodiversity and biodiversity hot spots.	Lecture delivery with discussion and by showing videos.	Genetic diversity of rice in India, Advantages of biodiversity to developing countries. Endangered Bengal Tiger, Black buck, Indian Rhino. The western ghats and Eastern Himalayas region.

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Week 5	Lecture 10	Biodiversity and conservation(hot spots of biodiversity)	T-1 R-1	RW-9 RW-10 RW-21 RW-22 AV-24 AV-25 AV-52	Introduction to biodiversity, types of biodiversity such as genetic, species and ecosystem diversity. Values of biodiversity: ecosystem and biodiversity services, ecological, economic, social, aesthetic and Informational value Biodiversity hot spots.	Students will learn about biodiversity and various types of biodiversity. Make student aware about the values of biodiversity and biodiversity hot spots.	Lecture delivery with discussion and by showing videos.	Genetic diversity of rice in India, Advantages of biodiversity to developing countries. Endangered Bengal Tiger, Black buck, Indian Rhino. The western ghats and Eastern Himalayas region.
Week 6	Lecture 11	Biodiversity and conservation(ecosystem and biodiversity services, ecological, economic, social, aesthetic and Informational value)		AV-20 AV-21 AV-23	Threats to biodiversity due to habitat destruction, poaching, pollution, climate change, biological invasion, legal system, mining. Categories of species on the basis of threat: endangered, vulnerable, threaten, edge, endemic and rare species.	Making students aware about the values of biodiversity and the main reasons of destruction of biodiversity.	Lecture delivery with discussion and videos.	Indian Sandal wood plant is a vulnerable species owing to exploitation and smuggling of wood for fine furniture. Destruction of Biodiversity in Tehri Dam Uttarakhand.
	Lecture 12	Biodiversity and conservation(Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity)	T-1 R-1	RW-20 AV-20	Endangered and endemic species in India. The methods of conservation of biodiversity - In situ conservation: national parks, wildlife sanctuary and biosphere reserves. The merits and demerits of each of the conservation method. The progress report of the field work based term paper will be collected at the end of this lecture.	Making students aware about the values of biodiversity and different methods of conservation of biodiversity.	Lecture delivery with discussion and videos.	Indian Sandal wood plant is a vulnerable species owing to exploitation and smuggling of wood for fine furniture. Destruction of Biodiversity in Tehri Dam Uttrakhand.
Week 7	Lecture 13	Biodiversity and conservation(biogeographic zones of India)	T-1 R-1	AV-22	Bio-geographical classification of India. India: a mega-diversity nation. Mega diverse countries across world.	To make student aware about types of bio-geographical region found in India.	Lecture delivery with discussion and videos.	Ten major bio-geographical regions of India

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		SPILL OVER						
Week 7	Lecture 14				Spill Over			
		MID-TERM						
Week 8	Lecture 15	Environmental pollution (environmental pollution, types, causes, effects and controls of air, water, soil, noise and radiation pollution)	T-1 R-1	RW-13 RW-14 RW-15 RW-16 RW-19 AV-17 AV-18 AV-19	Lecture 15: Introduction to environmental pollution, Types of environmental pollution. Cause, effect and control of air pollution. Major air pollutants and their sources and control measures. Lecture-16: Cause, effect and control of water pollution. Thermal pollution and marine pollution. Basic concept of Eutrophication and biomagnification. Lecture 17: soil and noise pollution. Major soil pollutants and their impacts on human health.	Student will learn about major type of pollution's and their source with example of air pollution. Lecture-16: Make student aware about cause, effect and control of water pollution. Also, will learn basic concepts such as Eutrophication and bio-magnification. Lecture 17: Students will learn about soil and noise pollution and their effects.	Lecture delivery with discussion.	
	Lecture 16	Environmental pollution (environmental pollution, types, causes, effects and controls of air, water, soil, noise and radiation pollution)	T-1 R-1	RW-13 RW-14 RW-15 RW-16 RW-19 AV-17 AV-18 AV-19	Lecture 15: Introduction to environmental pollution, Types of environmental pollution. Cause, effect and control of air pollution. Major air pollutants and their sources and control measures. Lecture-16: Cause, effect and control of water pollution. Thermal pollution and marine pollution. Basic concept of Eutrophication and biomagnification. Lecture 17: soil and noise pollution. Major soil pollutants and their impacts on human health.	Student will learn about major type of pollution's and their source with example of air pollution. Lecture-16: Make student aware about cause, effect and control of water pollution. Also, will learn basic concepts such as Eutrophication and bio-magnification. Lecture 17: Students will learn about soil and noise pollution and their effects.	Lecture delivery with discussion.	

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Week 9	Lecture 17	Environmental pollution (environmental pollution, types, causes, effects and controls of air, water, soil, noise and radiation pollution)	T-1 R-1	RW-13 RW-14 RW-15 RW-16 RW-19 AV-17 AV-18 AV-19	Lecture 15: Introduction to environmental pollution, Types of environmental pollution. Cause, effect and control of air pollution. Major air pollutants and their sources and control measures. Lecture-16: Cause, effect and control of water pollution. Thermal pollution and marine pollution. Basic concept of Eutrophication and biomagnification. Lecture 17: soil and noise pollution. Major soil pollutants and their impacts on human health.	Student will learn about major type of pollution's and their source with example of air pollution. Lecture-16: Make student aware about cause, effect and control of water pollution. Also, will learn basic concepts such as Eutrophication and bio-magnification. Lecture 17: Students will learn about soil and noise pollution and their effects.	Lecture delivery with discussion.	
	Lecture 18	Environmental pollution(ill-effects of Fireworks)	T-1 R-1	RW-1 RW-3 RW-4 RW-5 RW-12 AV-13 AV-15 AV-16	Ill effects of fireworks, Nuclear and radiation pollution. Cause, effect and control of radiation pollution. Solid waste management: control measures of urban and industrial waste. Pollution case study: Bhopal gas tragedy, Chernobyl accident, Ganga water pollution.	Making students about ill effects of firework, nuclear hazards, solid waste and its management procedures.	Lecture delivery with ppt, discussion and documentary clip.	
Week 10	Lecture 19				Assignment - Field / industrial visit based			

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Week 10	Lecture 20	Environmental Policies & Practices(Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture)	T-1 R-1	RW-17 RW-18 AV-11 AV-12	Global climate change, Greenhouse effect and global warming. Effect of increase of Carbon dioxide and environmental effects of global warming, its control measure. Cause and mechanism of ozone layer depletion. Environmental effects of ozone layer depletion Causes and effects of acid rain. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will get aware about green house effect, Global warming, Acid rain and their effect on environment. Student will also learn about ozone layer depletion, cause and their effect on environment.	Lecture delivery with necessary animations and videos.	
Week 11	Lecture 21	Environmental Policies & Practices(Environment Laws: Environment Protection Act)	T-1 R-1	RW-11 AV-9 AV-10	Environmental legislation: Environment (protection) Act, Air (Prevention & Control of Pollution) Act, Water (Prevention and control of Pollution) Act. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students	Students will learn about environment legislation and various Environmental Law.	Lecture delivery with discussion.	

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Week 11	Lecture 21	Environmental Policies & Practices(Air (Prevention & Control of Pollution) Act)	T-1 R-1	RW-11 AV-9 AV-10	Environmental legislation: Environment (protection) Act, Air (Prevention & Control of Pollution) Act, Water (Prevention and control of Pollution) Act. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students	Students will learn about environment legislation and various Environmental Law.	Lecture delivery with discussion.	National Green Tribunal and supreme court judgement against stubble and solid waste burning, responsible for smog in National Capital Region (NCR).
		Environmental Policies & Practices(Water (Prevention and control of Pollution) Act)	T-1 R-1	RW-11 AV-9 AV-10	Environmental legislation: Environment (protection) Act, Air (Prevention & Control of Pollution) Act, Water (Prevention and control of Pollution) Act. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students	Students will learn about environment legislation and various Environmental Law.	Lecture delivery with discussion.	National Green Tribunal and supreme court judgement against stubble and solid waste burning, responsible for smog in National Capital Region (NCR).
	Lecture 22	Environmental Policies & Practices(Wildlife Protection Act)	T-1 R-1	RW-2 AV-5 AV-6 AV-7 AV-8 AV-10	Wildlife Protection Act, Forest conservation act, Issues involved in the enforcement of environmental legislation. International agreements on environment protection: : Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will learn about wildlife and forest act. Student will also learn about international agreements on environmental protection.	Lecture delivery with discussion.	

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Week 11	Lecture 22	Environmental Policies & Practices(Forest Conservation Act)	T-1 R-1	RW-2 AV-7 AV-8 AV-10	Wildlife Protection Act, Forest conservation act, Issues involved in the enforcement of environmental legislation. International agreements on environment protection: : Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will learn about wildlife and forest act. Student will also learn about international agreements on environmental protection.	Lecture delivery with discussion.	International agreements and their role in policy making and environment protection.
		Environmental Policies & Practices(International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD))	T-1 R-1	RW-2 AV-7 AV-8 AV-10	Wildlife Protection Act, Forest conservation act, Issues involved in the enforcement of environmental legislation. International agreements on environment protection: : Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will learn about wildlife and forest act. Student will also learn about international agreements on environmental protection.	Lecture delivery with discussion.	

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Week 12	Lecture 23	Environmental Policies & Practices(Solid waste management: Control measures of urban and industrial waste)	T-1 R-1	AV-14	Solid waste and its management: Control measures of urban and industrial waste. Role of tribal populations in policy making, human wildlife conflicts. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will get knowledge about solid waste, its effect and solid waste management. Student will also learn about role of tribal community in policy making related to environment conservation.	Lecture delivery with discussion.	
		Environmental Policies & Practices(role of tribal populations in policy making, human wildlife conflicts)	T-1 R-1	AV-14	Solid waste and its management: Control measures of urban and industrial waste. Role of tribal populations in policy making, human wildlife conflicts. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will get knowledge about solid waste, its effect and solid waste management. Student will also learn about role of tribal community in policy making related to environment conservation.	Lecture delivery with discussion.	Tribal community of India and their role in species conservation.
	Lecture 24	Human Communities and the Environment(Human population growth: Impacts on environment, human health and welfare)	T-1 R-1	RW-7 AV-4	Population growth: Birth rate, death rate, migration. Factors affecting variation of population: Causes and effects of population growth on human health, welfare and environment. Control of human population. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will get awareness about causes and effects of population growth.	Lecture delivery with discussion.	Population growth across globe and effects on resource depletion.

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Week 13	Lecture 25	Human Communities and the Environment(disaster management, floods, droughts, earthquake, cyclones and landslides)	T-1 R-1	AV-48 AV-49 AV-53	Disaster and disaster management : Types of disaster, cause, effects and management of floods, earthquake, cyclones and landslides. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Making students aware about disasters and disaster management.	Lecture delivery with discussion.	Cyclone Ockhi (2017), Amphan (2020) and Tauktae (2021).
	Lecture 26	Human Communities and the Environment (environmental ethics, role of Indian and other religions and cultures in environmental conservation, public awareness)	T-1 R-1	AV-1 AV-2 AV-3	Environmental ethics: Issues and possible solutions. Role of Indian and other religions and cultures in environmental conservation, Need of public awareness. After completion of lecture delivery remaining time will be utilized for taking presentation of assignment from students.	Students will learn about Environmental ethics issues and possible solutions	Lecture delivery by showing documentary clips and ppts.	
Week 14	Lecture 27	Human Communities and the Environment (Environmental movements : Chipko, silent valley, bishnois of Rajasthan)	T-1 R-1	RW-5 RW-6	Environmental movements : Chipko, Silent valley, Bishnoi's of Rajasthan. Role of an individual in conservation of natural resource. Environmental ethic and importance	Students will learn about various Environmental movements and environmental communication.	Lecture delivery with the help of ppt, animations and documentary clips.	Swachh Bharat Abhiyan (Initiative taken by Honorable prime minister of India), Role of Bishnois in environment conservation.
		SPILL OVER						
Week 14	Lecture 28				Spill Over			
Week 15	Lecture 29				Spill Over			
	Lecture 30				Spill Over			

Scheme for CA:

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CA Category of this Course Code is:A0101 (1 out of 1)

Component	Weightage (%)	Mapped CO(s)
Assignment - Field / industrial visit based	100	CO1, CO2

Details of Academic Task(s)

Academic Task	Objective	Detail of Academic Task	Nature of Academic Task (group/individuals)	Academic Task Mode	Marks	Allottment / submission Week
Assignment - Field / industrial visit based	To make the student understand about environmental problems and propose some solution by engaging them into various field work based assignment and individual participation .	To submit a progress report, final term paper report and supporting information related to the field work done. Presentation/viva will also be conducted. The marks distribution will be as follows Total -100 marks. Progress report - 10 marks, Final term paper report-30 marks, Supporting information- 30 marks. Presentation/ Viva- 30 marks.	Individual	Offline	100	2 / 10

List of suggested topics for term paper[at least 15] (Student to spend about 15 hrs on any one specified term paper)

Sr. No.	Topic
1	Importance of solar energy as renewable source of energy and projects to strengthen solar energy network in India.
2	To identify major health problems suffered by human population by the use of electronic gadgets (mobiles/laptops).
3	Water wastage at public places: Scope of technology based control of water wastage.
4	Plastic waste: Sources, disposal/management and availability and use of E-crusher at nearby public places.
5	Electronic wastes as future environmental problem of multinationals and Institutions: Practical solutions.
6	Rainwater harvesting: Survey on applicability and benefits.
7	Recycling of metals from electronic gadget: An approach to control metal pollution.
8	Smart watering: automated sprinkler and their role in water conservation (applicability in and around your place).
9	Sources of noise pollution in your area and practical solutions to control them.

10	Solar-power plant: awareness on applicability among students about benefits of solar energy.
11	An analysis on recycling of metals from electronic gadget: An approach to control metal pollution and to understand health problems to worker.
12	Groundwater pollution due to leaching from e-wastes components: Case study.
13	Survey on availability of online system for handling and disposal of produced waste from public places.
14	Identification of electrical energy wastage due to electronic gadgets : Practical solutions to reduce wastage.
15	Solid waste and its management: Problem with the landfill sites and environmental pollution.

Plan for Tutorial: (Please do not use these time slots for syllabus coverage)

Tutorial No.	Lecture Topic	Type of pedagogical tool(s) planned (case analysis,problem solving test,role play,business game etc)
Tutorial1	Environment types and components	Case Analysis
Tutorial2	Sustainable development	Case Analysis
Tutorial3	Soil Profiling	Case Analysis
Tutorial4	Forest Resources	Case Analysis
Tutorial5	Water Resources	Case Analysis
Tutorial6	Energy Resources	Case Analysis
Tutorial7	Ecosystem	Case Analysis
Tutorial8	Food Chain and Food Web	Case Analysis
Tutorial9	Ecological Pyramids	Case Analysis
Tutorial10	Ecological Succession	Case Analysis
Tutorial11	Biodiversity and India as Mega-diverse nation	Case Analysis
Tutorial12	Hot Spot of Biodiversity	Case Analysis
Tutorial13	Endangered, Endemic and EDGE Species	Case Analysis
Tutorial14	Biodiversity Conservation Methods	Case Analysis
After Mid-Term		
Tutorial15	Air Pollution	Case Analysis
Tutorial16	Water Pollution	Case Analysis
Tutorial17	Soil Pollution	Case Analysis

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Tutorial18	Noise Pollution	Case Analysis
Tutorial19	Nuclear Hazards	Case Analysis
Tutorial20	Bhopal gas tragedy	Case Analysis
Tutorial21	Ill Effect of Fireworks	Case Analysis
Tutorial22	Greenhouse Gases, Global warming and Acid Rain	Case Analysis
Tutorial23	Ozone Layer Depletion	Case Analysis
Tutorial24	Environmental Policies and International Treaties and Protocols	Case Analysis
Tutorial25	Population Growth	Case Analysis
Tutorial26	Solid Waste Management	Case Analysis
Tutorial27	Disaster Management	Case Analysis
Tutorial28	Environmental Movements	Case Analysis

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