JAIN (DEEMED-TO-BE UNIVERSITY)
BENGALURU, KARNATAKA

P2: Teaching-Learning and Evaluation Plan

PROGRAMME: BACHELOR OF COMPUTER APPLICATIONS

Teaching - Learning & Evaluation Plan

Course Information:

Course Code: **19NENVI0VE2** Course Title: **Environmental Studies**

Credits Units: 4	Total Contact Hours: 60	L-T-P: 4-0-0
CA: ESE Weightage- 50:50	Pass Marks (CA and ESE): 0 and 35%	Aggregate Pass Marks: 40%
ESE Question Paper Marks:50	Special Examination Fees: NA	Pre-requisite (if any): NA
Course Facilitator: Dr.Suma S,	Prof. Naren J, Assistant Professors,	School of CS and IT

(Note: With effect from 2021, CA: ESE weightage will be 50:50 and Pass marks in CA and ESE will be 0 and 35%. Aggregate pass marks will be 40%)

Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)

At the end of the programme, students will be able to**:**	
PO1	Demonstrate knowledge and skills in diverse fields of management such as media, branding and digital marketing, strategic leadership and international business, tourism, hospitality and aviation along with financial services.
PO2	Build business leaders and entrepreneurs with contemporary skills to choose business opportunities in domestic and international market.
PO3	Construct and develop expertise towards continuous learning and research.
PO4	Exhibit professional capabilities with ethics and values in the global market.
PO5	Build collaboration among the different stakeholders in business, trade and commerce.
PO6	Develop strategic thinking and leadership qualities which foster a culture of innovation.
PO7	Plan a sustainable career path in different business domains which contribute to the economy.

PSO1	Explore opportunities and challenges in international markets and develop innovative strategies for customer satisfaction and profitability.
PSO2	Apply contemporary tools and techniques for effective international business decisions and develop efficient methodologies and processes.

PSO3	Adapt national and global values in business and society and overcome global ethical issues with social responsibility.
PSO4	Discuss current developments in global economy and evaluate strategies for business sustenance in challenging global environment.
PSO5	Develop entrepreneurial mindset and leadership qualities to enter the global market.

Course Objectives:

The students will be able to understand the multidisciplinary nature of environmental studies, ecosystem and various natural resources. Also will be able to understand the levels of biological diversity and facts about the Environmental pollution

Course Outcomes:

At the end of the course, students will be able to:

Sl. No.	Course Outcome	Description	Bloom's Taxonomy Level
1.	CO 1	Discuss with students the importance of Environment and to protect the eco systems mainly forests, rivers and lakes etc	Level 2 Understanding
2.	CO 2	Demonstrate on sustainable development by reducing the use of non-renewable resources and increasing renewable energy resources with the support of biodiversity services	Level 3 Applying
3.	CO 3	Criticize on the harmful effects of various pollution to people around and help to reduce pollution	Level 4 Analyzing
4.	CO 4	Discriminate the importance of global warming, ozone layer depletion and its impacts with the understanding of various environmental laws	Level 4 Analyzing
5.	CO 5	Examine the resettlement and rehabilitation on environment, Support the government and the NGO`s in protecting our valuable flora, fauna and endangered species.	Level 4 Analyzing

CO-PO/PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO1	2	1	1	1	1	1	1	1	1	1	1	1
CO2	1	2	2	1	1	1	1	1	1	1	1	1

CO3	1	1	1	2	1	2	1	1	1	1	1	1
CO4	1	1	1	1	1	1	1	1	1	1	1	1
CO5	1	1	1	1	1	1	1	1	1	1	1	1
Total												

Course Contents:

Module	Details	Contact Hours
1	**Introduction to environmental studies** • Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. • Scope and importance; Concept of sustainability and sustainable development.	2
2	**Ecosystems** What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	6
3	**Natural Resources: Renewable and Non-renewable Resources** • Land Resources and land use change; Land degradation, soil erosion and desertification. • Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. • Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). • Heating of earth and circulation of air; air mass formation and precipitation. • Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.	8
4	**Biodiversity and Conservation** • Levels of biological diversity :genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots • India as a mega-biodiversity nation; Endangered and endemic species of India	8

	• Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. • Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
5	**Environmental Pollution** • Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution • Nuclear hazards and human health risks • Solid waste management: Control measures of urban and industrial waste • Pollution case studies	8
6	**Environmental Policies & Practices** • Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. • Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC). • Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context	7
7	**Human Communities and the Environment** Human population and growth: Impacts on environment, human health and welfares. • Carbon foot-print. • Resettlement and rehabilitation of project affected persons; case studies. • Disaster management: floods, earthquakes, cyclones and landslides. • Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan. • Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. • Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	6
8	**Field work** • Visit to an area to document environmental assets; river/forest/flora/fauna, etc. • Visit to a local polluted site – Urban/Rural/Industrial/Agricultural. • Study of common plants, insects, birds and basic principles of identification. • Study of simple ecosystems-pond, river, Delhi Ridge, etc.	5

Session-Wise Plan:

Module	Session	Topic	Readings and References	Pedagogy/ Activity Planned	CO	Mode of Delivery
1	1-2	Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. Scope and importance; Concept of sustainability and sustainable development.	**Online reference:** https://www.deshbandhucollege.ac.in/pdf/resources/1587401288_BA(H)-Psc-Eco-Eng-BA(P)-II-Environment.pdf **Article:** Researching learning environments and students' innovation competences	Introduction about Environmental studies and discussion with PPT and lecture **Activity:** Think of all the things that you do in a day. List these activities and identify the main resources used during these activities. What can you do to prevent waste, reuse articles that you normally throw away, what recycled materials can you use? Think of the various energy sources you use every day. How could you reduce their use?	CO 1	Synchronous Teaching
2	3-5	What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession	A Virtual Tour of Concord's Lands: https://concordma.gov/1710/A-Virtual-Tour-of-Our-Lands **Article:** A conceptual framework for	A virtual tour will help the students to understand the ecosystem and its functioning Flip Class: Students will be given the article and online reference	CO 1	3 Asynchronous Teaching 4-5 Synchronous Teaching

			ecological economics based on systemic principles of life **Online reference:** https://www.nationalgeographic.org/encyclopedia/ecosystem/ https://www.worldfuturecouncil.org/food-land-livelihoods/?gclid=Cj0KCQjwlMaGBhD3ARIsAPvWd6juFlz_r9irvf0-7uzkA2TWlF4mh8CUepQSxADNfg_BPtSipE0LXXsaAiK9EALw_wcB	beforehand and will be discussed		
	6-8	Case studies of the following ecosystems: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	**Case Studies:** https://www.researchgate.net/publication/236847796_Forest_ecosystems_and_global_change_The_case_study_of_Insubria https://www.ias.ac.in/article/fulltext/jess/124/07/1389-1398#:~:text=Grassland%20ecosystem%20is%20critical%20for,conservation%20and%20management%20of%20wildlife.&text=The%20study%20revealed%20that%2088,grassland%2	Discussion on various ecosystem based on the case studies Students are asked to go through the video in understanding the various ecosystems Students will be assessed by giving quiz	CO 2	6-7 Synchronous Teaching 8 Asynchronous Teaching

			0of%20Kanha%20National%20Park. https://www.eolss.net/Sample-Chapters/C20/E6-142-DE-04.pdf **Video on** Layers of the Earth https://www.youtube.com/watch?v=DftEDVzGnMg			
3	9-10	Natural Resources: Renewable and Non-renewable Resources. Land Resources and land use change; Land degradation, soil erosion and desertification	**Online reference:** https://www.kqed.org/science/renewable-and-non-renewable-energy-resources-explained **Article:** Renewable & Non-renewable resources https://extension.psu.edu/renewable-and-nonrenewable-resources	Flip Class: Students will be given the article, online reference and video beforehand and will be discussed	CO 2	9-10 Synchronous Teaching
	11-12	Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations	**Online Reference:** **Deforestation: Facts, Causes & Effects:** https://www.livescience.com/27692-deforestation.html#:~:text=Deforestation%20is%20the%20permanent%20removal,to%20the%20World%20Wildlife%20Fund. Dam building:	Flip class: Discussion based on the online reference shared on Deforestation and Dam building	CO 2	Synchronous Teaching

			https://www.dw.com/en/five-ways-mega-dams-harm-the-environment/a-53916579 https://www.drishtiias.com/daily-updates/daily-news-analysis/environmental-impact-of-dams			
	13-14	Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).	Article on Sustainable Groundwater use and overexploitation http://www.eolss.net/Sample-chapters/C07/E2-09-07-01.pdf https://www.yourarticlelibrary.com/essay/use-and-over-utilization-of-surface-and-ground-water/27334	**Activity:** Students will be going through various facts using article and prepare plan to save water	CO 2	Synchronous Teaching
	15-16	Heating of earth and circulation of air; air mass formation and precipitation. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies	**Case study on Generating biogas from waste: Biotech's initiative** **Video on Renewable and Non-renewable energy** https://www.youtube.com/watch?v=osBVRfvkmAU	Case Study discussion **Activity:** Attempt to assess the level of damage to the environment due to your actions that have occurred during your last working day, the last week, and the last year. Then estimate the damage you are likely to do in your	CO 2	Synchronous Teaching

				lifetime if you continue in your present ways. Examples: Plastic: Plastic bags, Fossil fuels, Water, Food, Paper, and Electrical Energy.		
4	17-20	Biodiversity and Conservation Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India	**Case Study on** BERI (Biomass Energy for Rural India), Villages of Karnataka **Online reference:** https://byjus.com/biology/biodiversity-conservation/ **Video on Biodiversity** https://www.youtube.com/watch?v=1cvMX82iwRM	Case discussion on Biodiversity Video on biodiversity helps the students to understand the climatic change and its impact on ecosystem	CO 2	17-19 Synchronous Teaching 20 Asynchronous Teaching
	21-24	Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value	**Article on Biodiversity Hotspots Revisited** https://academic.oup.com/bioscience/article/53/10/916/254893?login=true **Online reference** https://www.naturetrust.bc.ca/conserving-land/threats-to-biodiversity https://www.yourarticlelibrary.com/biodiversity/6-main-threats-to-	Teaching with PPT and discussion based on the article and online reference shared Linkedin Learning Certificate	CO 2	21-23 Synchronous Teaching 24 Asynchronous Teaching

			biodiversity-explained/39445 https://www.environmentalpollution.in/essay/biodiversity-types-importance-and-conservation-methods-with-diagram/311 **Linkedin Learning Course**			
5	25-28	Environmental Pollution Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution Nuclear hazards and human health risks	**Case Study on Delhi Air pollution** https://www.cidm.co.in/delhi-air-pollution-case-study/	Students will have to go through the case study Panel discussion on the various causes, effects and control measures in teams with reference of the case study	CO 3	25 Asynchronous Teaching 26-28 Synchronous Teaching
	29-32	Solid waste management: Control measures of urban and industrial waste and Pollution	**Online Reference:** https://www.britannica.com/technology/solid-waste-management **Video on** Pollution and Waste management	**Internal Assessment:** Group presentation on pollution Students will be assessed by giving quiz	CO 3	29-31 Synchronous Teaching 32 Asynchronous Teaching
6	33-34	Environmental Policies & Practices Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture	**Article:** India's Strategies to Tackle Global warming and Climate Change **Online Reference:**	**Activity:** Students will have to go through the article reference and prepare plan for global warming	CO 4	Synchronous Teaching

			http://umeschandracollege.ac.in/pdf/study-material/environmental/UNIT-6.pdf https://climate.nasa.gov/resources/global-warming-vs-climate-change/#:~:text=Global%20warming%20is%20the%20long,gas%20levels%20in%20Earth's%20atmosphere.			
	35-37	Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and	Article on Environment Laws In India https://www.mondaq.com/india/waste-management/624836/environment-laws-in-india https://www.cabdirect.org/cabdirect/abstract/19971903548 **Video on Environmental Acts of India** https://www.youtube.com/watch?v=hsHZJp6ae3w	Students discussion based on the article and video Students will be assessed by giving quiz	Co 4	35-36 Synchronous Teaching 37 Asynchronous Teaching
	38-39	Conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC). Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context	https://www.opcw.org/chemical-weapons-convention https://www.un.org/en/observances/biological-diversity-day/convention	Students group discussion based on the article and video	CO 4	Synchronous Teaching

			Video on human, wildlife conflicts in Indian context https://www.youtube.com/watch?v=O9-wekzDfRo			
7	40-41	Human Communities and the Environment Human population and growth: Impacts on environment, human health and welfares. Carbon foot-print	**Article:** Handling disaster risks with the community-based approach **Online Reference:** https://www.ugc.ac.in/oldpdf/modelcurriculum/Chapter7.pdf http://www.aagasc.edu.in/Unit%207%20EVS.pdf	**Internal Assessment:** Student case study discussion related to environmental issues	CO 5	Synchronous Teaching
	42-43	Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods, earthquakes, cyclones and landslides. Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan	**Case study on Resettlement and rehabilitation:** https://ascelibrary.org/doi/10.1061/%28ASCE%29LA.1943-4170.0000370 **Video on** Disaster Management https://www.youtube.com/watch?v=DExlZTfKZAM	**Activity:** Students will have to go through the reference and video to prepare plan disaster management	CO 5	Synchronous Teaching
	44-45	Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Environmental communication and public awareness, case	**Online Reference:** https://www.ucl.ac.uk/archaeology/research/directory/environmental-ethics-ancient-india	Guest lecture on Environmental issues	CO 5	Synchronous Teaching

		studies (e.g., CNG vehicles in Delhi)				
8	46-50	Field work Visit to an area to document environmental assets; river/forest/flora/fauna, etc. Visit to a local polluted site – Urban/Rural/Industrial/Agricultural Study of common plants, insects, birds and basic principles of identification. Study of simple ecosystems-pond, river, Delhi Ridge, etc	**Article:** https://www.researchgate.net/publication/323063061_Something_New_Under_the_Sun_An_Environmental_History_of_the_Twentieth-Century_World_by_J_R_McNeill_2001_New_York_Norton_Reviewed_by_Michael_Bess https://www.scribd.com/doc/38925290/Study-of-Common-Birds	Students will be ask to prepare some measures related to environment	CO 5	Asynchronous Teaching