Dr. Vishwanath Karad
MIT WORLD PEACE UNIVERSITY | PUNE
MIT-WPU

Course Code	CIV1026B			
Course Category	BS			
Course Title	Environmental Science			
Teaching Scheme and Credits	L	T	Laboratory	Credits
Total work load hours	1	-	-	1+0+0=1

Pre-requisites:

Course Objectives:

Knowledge

1. To impart sense of community responsibility by becoming aware of scientific issues in the larger social context

Skills

1. To develop an interdisciplinary approach to complex environmental problems using basic tools of the natural and social sciences including biology chemistry, political sciences and technology

Attitude

1. To inculcate ability to work effectively as a member of interdisciplinary team to solve environment related social issues

Course Outcomes:

After completion of this course, students will be able to:

CO1: Correlate core concepts and methods from ecological and physical sciences and their application in environmental problem solving. CL-II)

CO2: Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world. (CL-V)

CO3: Apply systems, concepts and methodologies to analyze and understand interactions between social and environmental processes (CL-III)

Course Contents:

Multidisciplinary nature of environmental science

Definition, scope and importance. Need for public awareness.

Natural Resources:

Renewable and non-renewable resources: Natural resources and associated problems a) Forest resources b) Water resources c) Mineral resources d) Food resources e) Energy resources f) Land resources. Role of an individual in conservation of natural resources. Case Studies.

Ecosystem, biodiversity and its conservation

Concept, structure, functions and types of an ecosystem. Introduction – Definition of biodiversity: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity. Biodiversity at global, National and local levels. India as a mega-diversity nation./ Hot-sports of biodiversity. Threats to biodiversity. Conservation of biodiversity

Environmental Pollution

Definition, Causes, effects and control measures of: - a) Air pollution b) Water pollution c) Soil pollution d) Marine pollution e) Noise pollution f)Thermal pollution g) Nuclear hazards ,Solid waste Management Role of an individual in prevention of pollution. Disaster management: floods, earthquake, cyclone and landslides.

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Social Issues and the Environment

From Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environmental regulations. Issues involved in enforcement of environmental legislation. Public awareness.

Learning Resources:

Reference Books:

1. Environmental Science and Engineering by Benny Joseph Mc Graw Hill Publication-2018
2. Environmental Pollution Control Engineering by C S Rao, New Age International Publishers-2021

Supplementary Reading:

1. Environment and Sustainable Development, Proceedings of the 2022 7th Asia Conference on Environment and Sustainable Development, by Keiji UjikawaMikio IshiwatariEric van Hellebusch, Springer-2023
2. Advances in Energy Resources and Environmental Engineering by Abdelfatah Abomohra, Razif Harun, Jia Wen, Springer-2023

Web Resources:

1. World Resources Institute- https://www.wri.org/resources- A webpage managed by WRI to keep updates on Environment and the available resources-2023
2. The New Era of Environmental Science- Milton Muldrow TedEx- 2017 https://www.youtube.com/watch?v=0dgQwmvBM2w&ab_channel=TEDxTalks
3. The fastest way to slow climate change now- Ilissa Ocko: TED-2022- https://www.youtube.com/watch?v=tlWuP7wESZw&ab_channel=TED
4. NPTEL Course on "Environmental Management" by T. V. Ramachandra IISc Bangalore-2012- Course Link https://archive.nptel.ac.in/courses/120/108/120108004/#

MOOCs:

1. NPTEL Course on "Environmental Science" By Prof. Sudha Goel & Prof. Shamik Chowdhury IIT Kharagpur -2023- Course Duration: 12 weeks, Course Link: https://onlinecourses.nptel.ac.in/noc23_hs155/preview
2. NPTEL Course on "Environmental Studies" By Dr. Tushar IIT Indore- 2023, Course Duration: 12 weeks, Course Link: https://onlinecourses.swayam2.ac.in/cec19_bt03/preview

Pedagogy:

1. Co-teaching
2. Audio- video techniques
3. Demonstrations
4. Systematic use of group works and project-based learning

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Assessment Scheme:
Class Continuous Assessment (CCA): 100 marks

Assignment / short term Question answers Tests	Tutorial	Mid Term Test	Presentations	Case Study	MCQ	Oral	Attendance	Total
40	-	20	30	10	-	-	-	100

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Syllabus:

Module No.	Contents	Workload in Hrs		
		Theory	*Tutorial*	*Assess*
1	**Multidisciplinary nature of environmental science** Definition, scope and importance. Need for public awareness. Natural Resources Renewable and non-renewable resources: Natural resources and associated problems. a) Forest resources: b) Water resources c) Mineral resources d) Food resources. e) Energy resources f) Land resources Role of an individual in conservation of natural resources. Case Studies	4	-	-
2	**Ecosystem, biodiversity and its conservation** Concept, structure, functions and types of an ecosystem Introduction – Definition of biodiversity: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity, biodiversity at global, National and local levels. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity. Conservation of biodiversity.	4	-	-
3	**Environmental Pollution** Definition, Cause, effects and control measures of :- a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards ,Solid waste Management Role of an individual in prevention of pollution. Disaster management: floods, earthquake, cyclone and landslides.	4	-	-
4	**Social Issues and the Environment** From Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environmental regulations. Issues involved in enforcement of environmental legislation. Public awareness.	4	-	-

Prepared by,	Verified by,	Forwarded by,	Approved by,
Prof. Dr. Unnati Agrawal Course Chairman, Department of Civil Engineering, MITWPU, Pune 1/2/23	Prof. Sagar Kolapkar TY Coordinator Department of Civil Engineering, MITWPU, Pune	Prof. Dr. S. A. Bokil Head, Department of Civil Engineering, MITWPU, Pune	Dr. Dinesh Seth, Dean, Faculty of Engineering and Technology, MITWPU, Pune

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