

As Per NEP 2020

University of Mumbai



Syllabus for Basket of Open Elective (OE)	
Board of Studies in Zoology	
UG First Year Programme	
Semester - II	
Title of Paper	Credits 2/ 4
I) OE3A: Environmental Science	2
II)	
III)	
From the Academic Year	2024-25

OE3B: Environmental Science

Sr. No.	Heading	Particulars
1	Description the course:	The course is designed to provide students with the knowledge and skills required to make a positive contribution to the protection and management of the environment.
2	Vertical :	Major/Minor/Open Elective /Skill Enhancement / Ability Enhancement/Indian Knowledge System (Choose By √)
3	Type :	Theory
4	Credit:	2 credits (1 credit = 15 Hours for Theory in a semester)
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: The course aims at providing learners with, CO 1. To impart learners the knowledge of environment, ecosystem, natural resources and pollution. CO 2. To acquaint learners with the existing national programs on environment.	
8	Course Outcomes: Upon completion of the course, the learners should be able to: OC1. Contemplate the interrelations between the different natural resources, environment, and ecosystems. OC 2. Understand the issues of environmental pollution and will be positively influenced to contribute to the cause of environment protection.	

OE3B: Environmental Science

9	Module 1: Environmental Science-I	15hr
	1.1 Environment and Ecosystem: Definitions, abiotic & biotic components, Concept of ecosystems and biomes, energy flow in ecosystems.	02hr
	1.2 Natural Resources: 1.2.1 Renewable energy resources: wind, solar, tidal, biomass 1.2.2 Non-renewable resources: Fossil fuels-natural gas, petroleum, coal	03hr
	1.3 Environmental Pollution: 1.3.1 Air pollution: Definition, causes, smog, effects & control measures. 1.3.2 Water pollution: Definition, causes, effects & control measures, Water cycle, concept of eutrophication 1.3.3 Soil pollution: Definition, causes, effects & control measures 1.3.4 Radiation /radioactive pollution: Definition, causes, effects & control measures 1.3.5 Noise pollution: Definition, causes, effects & control measures, Noise level standards.	10hr
	Module 2: Environmental Science II	15hr
	2.1 Concept and causes of Global warming and Climate change	02hr
	2.2 Waste management: Management of solid waste, e-waste, plastics, biomedical waste, concept of composting of waste, landfills, 3 Rs-Reduce, Reuse and Recycle	04hr
	2.3 National Initiatives: 2.3.1 National Mission for Clean Ganga 2.3.2 Swachh Bharat Abhiyan 2.3.3 National Clean Air Programme (NCAP) 2.3.4 Green Rating for Integrated Habitat Assessment	04hr
	2.4 Regulations 2.4.1 Environment Impact Assessment: Aims, objectives and Guidelines 2.4.2 Environment Protection Act (1986): Aims, objectives and provisions 2.4.3 Environment/Green Audit	05hr
	Suggested assignment topics: Study of relevant topics such as food chain and food web, noise pollution, water pollution, vehicular pollution, dust on leaves of road side plants, solar panel, wind mill, biogas plant, pollution due to construction debris, idol immersion etc.	

10.	Text Books: 1. Odum, E.P. (1971) Fundamentals of Ecology. Third Edition, W.B. Saunders Co., Philadelphia 2. Dash M.C. (1994) Fundamentals of Ecology, Tata McGraw Hill, New Delhi. 3. Manjunath D.L. (2006) Environmental Studies. Pearson Education, India. 4. Anindita Basak (2009) Environmental Studies. Pearson. 5. Singh J.S., Singh S.P. & Gupta S.R. (2014) Ecology, Environmental Science & Conservation. S.Chand & Co. Ltd.
11.	Reference Books: 1. Kormondi E.J. (1999) Concepts of Ecology, Prentice Hall of India, New Delhi. 2. Odum E.P. and Barrett G. W. (2005) Fundamentals of Ecology, Thomson Asia Pvt. Ltd., Singapore. 3. Chapman J.L. and Reiss M.J. (2005) Ecology Principles and Applications, Cambridge University Press, London. 4. Hosetti B.B. (2006) Prospects and Perspective of Solid Waste Management. New Age International Publishers. 5. Khopkar S.M. (2020) Environmental Pollution Analysis. New Age International Publishers. 6. Allabaksh S.J., Ahmed S.A., Bhosle A.B., Kakavipure D.K. (2022) Fundamentals of Environmental Science and Management. A.G. Publishing House.

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