

Mizoram University

UG/Bachelor's Degree Programme with Multiple Entry and Exit Options

Under the New Education Policy 2020

in

ENVIRONMENTAL SCIENCE

First Semester

Semester	Course Code	Course Name	Components with Credits		Total credits
			Theory	Practical	
I	EVSC/MJ/100	Fundamentals of Environmental Science	3	1	4
	EVSC/MJ/101	Environmental Education and Awareness	4	-	4
	EVSC/MN/102	<i>[To be chosen from an MJ course offered by other disciplines]</i>	4	-	4
		Introductory Course (Interdisciplinary)	3	-	3
	AEC/103	MIL/English I	3	-	3
	VAC/104	Understanding India	2	-	2
					20

SEMESTER I

FUNDAMENTALS OF ENVIRONMENTAL SCIENCE

EVSC/MJ/100

Credits: 3 (Theory) + 1 (Practical)

THEORY

Unit 1: Principles of Environmental Science

Scope and importance of environmental science; Fundamental principles; Multidisciplinary nature of environmental science; Physico-chemical and biological factors in the environment; Social environment; Nature of man and environment interactions; Human population growth and environmental carrying capacity.

Unit 2: Basic Concept of Ecology

Introduction; Ecology and its branches; Concept of ecosystems, their structure and functions; Components of an ecosystem; Energy flow within ecosystem; Productivity and its measurements; Food chain and food web; Ecological pyramids; Ecological succession.

Unit 3: Environment and its components

Atmosphere, lithosphere, hydrosphere and hydrological cycles, biosphere, their structure and composition; Biogeochemical and nutrient cycles- nitrogen, carbon, oxygen.

Unit 4: Major Ecosystems and their Communities

Major ecosystems and their communities: Terrestrial ecosystems- tundra, boreal forest (Taiga), temperate deciduous forest, tropical forest. Aquatic ecosystems- freshwater ecosystems- lotic (rivers, streams) ecosystems, lentic (ponds, lakes) ecosystems.

PRACTICAL

1. Preparation of environmental diary.
2. Plotting of important protected areas of India.
3. Experiment to demonstrate the superiority of man over other primates by studying cranial size, dentition, versatility of limbs.
4. Determination of atmospheric temperature and relative humidity.
5. Working principle of pH meter and determination of pH of water sample.
6. Determination of Rainfall.

Suggested Readings

1. Santra, S.C. 2018. Environmental Science. New Central Book Agency (P) Ltd., Kolkata.
2. Goudie, A.S. 2018. Human impact on the natural environment, Wiley and Sons, US.
3. Moseley, W.G., Perramond, E., Hapke, H.M., Laris, P. 2013. An Introduction to Human-Environment Geography: Local Dynamics and Global Processes, Wiley & Sons, US.
4. Sharma, P.D. 2018. Ecology and Environment. Rastogi Publications (13th Edition), Meerut.
5. Singh, J.S., Singh, S.P., Gupta, S.R. 2017. Ecology, Environmental Science, and Conservation, S Chand Publishers, New Delhi
6. Agarwal, K.M., Sikdar, P.K. and Deb, S.C. 2013. A text book of Environment. Macmillan Publishers India Ltd.
7. Bharucha, E. 2015. Text Book of Environmental Studies. University Press (India) Pvt. Ltd., Hyderabad.
8. Das, R.C. and Behera, D.K. 2008. Environmental Science: Principle and Practice. PHI Learning Private Limited, New Delhi.
9. Gupta, A., Dey, M. and Bhattacharjee, P.R. 2001. Our Environment. Assam University,

Silchar.

10. William P Cunningham, Mary Ann Cunningham. 2006. Principles of Environmental Science: Inquiry and Applications (English) 4th Edition. McGraw Hill Education (India) Private Limited
11. Rai, P.K. 2015. Ecology and Environmental Science. Today & Tomorrow Printers & Publishers, New Delhi.
12. Daniel, D.C. 2014. Environmental Science (Tenth Edition). Jones and Bartlett Publishers, London.
13. Joshi, P.C. & Joshi, N. 2012. A Text Book of Environmental Science. APH Publishing Corporation. New Delhi.
14. Maiti, S.K. 2016. Handbook of Methods in Environmental Studies. Oxford Book Company, New Delhi.
15. Gupta, P.K. 2011. Methods in Environmental Analysis: Water, Soil, Air (2nd Edition). Vatsal Enterprises, New Delhi.

SEMES TER I

ENVIRONMENTAL EDUCATION AND AWARENESS

EVSC/MJ/100

Credits: 4

THEO RY

Unit 1: Fundamentals of Environmental Education

Environmental education: Background and definition, Methods of EE- Formal and Non-formal education, Goals and objectives of Environmental education; International norms guiding EE, Current scenario of EE in India and the world, Major challenges and the possible way-outs.

Unit 2: Environmental Ethics

Environmental ethics – concept, Eco-philosophy: eco-centric and anthropocentric world views, Environmental ethics and sustainable development; Ethical principles in moral reasoning about the environment; Imbibing lessons from religions, cultures and human values, Relevance of Environmental ethics in the present-day society

Unit 3: Environmental Awareness

Environmental Awareness: definitions and concepts, role of Government, NGOs and media; People's initiatives to save the environment in the western world; Gandhian, Marxism and Indian environmentalism; Environment awareness programme in Northeast India with special emphasis on Mizoram

Unit 4: Environmental Movement for Environmental Conservation

Global and National environmental Organizations and agencies; UNEP, MAB, IUCN, UNFCCC (COP); Environmental Movements in India- Chipko movement; Silent Valley project movement; Appiko movement; Narmada Bacchao Andolan movement; Tehri Dam Movement. Initiatives for Environment Conservation in India- government initiative, institutional initiative, role of voluntary organisation in environmental conservation, initiatives taken by educational institutions, green warriors:

Suggested readings

1. Senapati, T. and Sahoo, R.K. (2009). Environmental Education and Pollution Control, Mittal Publications, Daryaganj, New Delhi.
2. Khoiyambam, R.S. & Gupta, N., 2015. Introduction to Environmental Sciences. TERI Press, New Delhi.
3. Attfield, R. 2019., Environmental Ethics: A Very Short Introduction. Oxford Publication, UK.
4. Vromans, K. et al., 2012. Environmental Ethics- An Introduction and Learning Guide. Atlantic Publishers and distributors.
5. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA
6. Kothari Dr. Milind, 2005. Environmental Education – Universal Publication, Agra.

7. Thaddeus C. et al., 2001. World Directory of Environmental Organizations. International Center for the Environment and Public Policy, California Institute of Public Affairs.
8. Sahgal, A., 2010. CCE Awareness Environmental Studies-5. S. Chand Publishing
9. Bharucha, E. 2015. Text Book of Environmental Studies. University Press (India) Pvt. Ltd., Hyderabad.
10. Bharucha, E., 2015. Text Book of Environmental Studies. University Press (India) Pvt. Ltd., Hyderabad.
11. Vanramliana et al., 2015 A Textbook of Environmental Science. Scientific Book Centre, Guwahati.
12. Vij J. Nornam and Axelrod. 1999. The Global Environment, Institutions, Law and Policy, Earthscan Publishers Ltd, UK.
13. Mishra, S. 2010. Green Warriors: conserving Local Biodiversity through Community Conservation Initiatives in Orissa, India. Policy Matters, 17, 143-149.
14. Prabhu, D.V. 2018. Indian Initiatives for Environment Conservation. *Green Chemistry & Technology Letters*, 4(1)1-5