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**Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad**

**Syllabus of
Bridge Course in Environmental Science**

**Effective from
Academic year
2021-2022 onwards**

Implemented in the

College and University Department

**At the beginning of 1st Semester of M. Sc Environmental
Science**

For the identification of slow and fast learner's

*In Choice Base ~~at~~ Credit System
with OBE pattern.*

Dr. Babasaheb Ambedkar Marathwada, Aurangabad.

Introduction:

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The Environmental Science is a course of 21st century and it is also known as modern age course, as entire world is facing many environmental problems threatening the mankind. There are certain global environmental problems such as climate change and environmental pollution problems which are causing threat to all kinds of living organisms including man. If man and their living organisms is to be survived on earth and if we have to keep our environment in balanced condition, then we must first understand the environmental problems in detail, and then we have find out how to mitigate them, so mankind and living organisms on our planet survive for long time and our plant could maintain the balanced environment.

The environmental problems are being studied in wholestic manner for which we have to take the support of different disciplines. Therefore the environment science subject is being identified as interdisciplinary subject. By considering the interdisciplinary nature of subject, all science graduates along with allied subjects such as civil engineering etc are considered for admitting the students in M. Sc environmental Science course.

As there are the students from different science subject, admitting PG i.e M.Sc Environmental Science, many students may not be acquainted with certain important environmental aspects /components. Hence for development of the back ground in such student, there is a need of a bridge course in environmental science.

The present 'Bridge Course in Environmental Science' was designed to provide some important concepts introduction as the base to science graduates, who have not studied the environmental science subject at graduate level and this course is being implemented at beginning of M. Sc Environmental Science 1st semester.

This course is also useful for identified slow learner and fast learner from M. Sc Part 1st students which is very important components of OBE curriculum. As our university is implementing OBE curriculum is post graduate study. Hence to identify the slow learner and fast learners, the assessment of this course can be used.

The bridge course contents are equivalent to 2 credits paper and hence it is to be taught in 50 to 55 lectures and at the last, the examination of this paper is to be conducted and from the result of this exam slow and fast learner candidates can be identified. 30

Examination :

After the completion of teaching of this paper the examination is to be conducted by asking 30 MCQ question containing 2 marks each questions.

- i) Total MCQ to be asked = 30
- ii) Marks per question = 02 marks/ question
- iii) Time of examination = 30 minutes

Identification of slow and fast learner students :

- If student score 50% and more than 50% marks, then student is to be consider as 'fast learner'.
- If students get marks less than 50% then it is to be considered as 'slow learner'. The slow learner students to be upgrade by additional remedial teaching so they can match with the fast learner students and can study the environmental science in wholestic manner.

Note :

The conduction of 'Bridge course in Environmental Science' is mandatory and it is to be implanted the beginning of M. Sc Environmental Science course in first semester.:

To be implemented at the beginning of Semester – I

Bridge Course in Environmental Science

(Theory paper for identification of slow and fast learners from class)

Course Objectives

Students will be able to know

- i) Dynamics of ecosystems, energy flow in ecological system, nature of a biotic and biotic components and stability concept of ecosystem.
- ii) Various types of degraded ecosystems, ecological succession, concept of climax and role of pioneer's species in restoration of ecosystems.
- iii) Population dynamics, prey predator relationship, concept of community, community competition and ecological sustainability.

iv) Nature and status of renewable and non-renewable resources, mineral resources, fishery resources, energy resources and recycle, reuse and recovery of these resources.

Teaching Scheme			Evaluation Scheme		
Teaching	:-	By lectures	MCQ Test of 30 questions	:-	Total 60 Marks
	:-		Slow learners	:-	Marks below 30
	:-		Fast learners	:-	Marks 30 and above 30

Unit-I: - Ecosystem Dynamics:

Concept of ecosystem, A biotic and biotic components, Energy in ecological system, Concept of productivity, Energy flow in ecosystem, Food chain, Food web, Ecological pyramids, Cybernetic nature and stability of ecosystem, Concept of habitat, Ecological niche, Guild, concept of ecotone, Edge effect, Ecological succession, Mechanism of succession, Concept of climax, Concept of Gaia hypothesis.

Unit-II:- Restoration of Degraded Ecosystems:

Degraded ecosystems such as, Forest, grassland, Desert ecosystem, Lentic and Lotic ecosystems, Coastal ecosystems, etc., Role of pioneer species in restoration, Major biomes of world.

Unit-III :- Population and Community Ecology:

Concept of population ecology, Population dynamics, Characteristics of population: Natality, Mortality, Fecundity, Density, Age distribution, Prey predator Relationship, Population explosion: Concept of community, Interspecific and intraspecific competition, Concept of carrying capacity, Ecological sustainability.

Unit-IV :- Natural Resource management :

Renewable and non-renewable resources, Wild life resources, Water resources, Water use, Water conservation, Rain water harvesting, fishery resources, Mineral resources, Impact of over exploitation of mineral resources, Exploitation of metallic ores, Energy resources, Conventional and non-conventional energy resources, Natural resource conservation practices, Recycle, reuse and recovery of resources through 3 R principles.

Unit-V : Environmental Pollution abatement:

- Air pollution** :- Sources, Air pollution episodes and disasters, Industrial pollution, Major effects of air pollution, Control measures.
- Water pollution** :- Sources, Types, Water pollution episodes and disasters, Major effects, Monitoring and preventive measures.
- Noise pollution** :- Sources, Vibration and impact isolation, Monitoring of noise, Noise pollution control equipments, Noise standard and control measures.
- Soil pollution** :- Sources, Effects, Methods of soil reclamation, Soil conservation measures.
- Radiation** :- Major sources, Nuclear fusion and fission effects, Use of nuclear weapons and their consequences, Impact, Radioactive risk assessment and waste disposal practices.

Chapter VI :- Global issues

- Ozone depletion- causes and effects
- Global warming-major green house gases, causes and effects;
- Acid rain-causes and effects.
- Current development in the subject.

Course Outcome

Students should able to:

1. define ecological systems and its functionality along with stability concept of ecosystem
2. Describe various types of pioneer species and their role in restoration of ecosystems.
3. Recognize ecological succession, concept of climax and degraded ecosystem.
4. Examine nature and status of renewable and non renewable energy resources, mineral resources and energy resources.

* v) Students will also upgraded with global issues.

References

1. Fundamentals of Ecology – E.P. Odum, Revised Edition 1995-96
2. Principles of Ecology – P.S. Verma, V.K. Agarwal, S. Chand and Co. Delhi.
3. Principles of Environmental Science – Wart K.E.F. (1973) Mc Graw Hill Book Company.
4. Basic Ecology – E.P. Odum
5. Concept of Ecology – E.J. Koromondy, 1996, concept of modern biology series, prentice Hall.
6. Modern Concepts of Ecology – H.D. Kumar
7. Principles of Environmental Biology – P.K.G. Nair, Himalaya pub. House, Delhi
8. Environmental Biology – P.D. Sharma, Rastogi Publication, Meerut.
9. Ecology and Environment - P.D. Sharma, Rastogi Publication, Meerut.
10. Basic concepts of soil science – A.K. Kolay, Willey estern ltd., New Delhi.
11. Environmental Science – Enger, Smith, Smith, W.M.C. Brown company publishing
12. Practical Method in Ecology – R.K. Trivedi, P.K. Goel and Trisal., Enviro Publication, Karad.
13. Chemical methods for Environmental Analysis Water and sediments – R.Ramesh, M. Anbu. Macmillan India Ltd. New Delhi.
14. Fundamental of Ecology – Dash M.C. Tata McGraw Hill Pub. Co. Ltd. NewDelhi.
15. Concepts of Ecology (Fourth Edition)- Edward J. Kormondy, Prentice Hall of India Pvt. Ltd. New Delhi.
16. Environment forest, ecology and man – Dixit R.K. Rastogi Publication, NewDelhi.
17. Environment, energy, health planning for conservation – V. Vidyanath, Gyan Publishing House, New Delhi
18. Air pollution-M.N. Rao
19. Air pollution- A.C. Stern, Academic press Vol. I-X.
20. Air pollution-V.P. Kudesia.
21. Air pollution control-NEERI
22. Air pollution-Magill Holder and Ackely
23. Water pollution-A.K. Tripathi and S.N. Pande
24. Waste water engineering, treatment, disposal and reuse-Metcalf and Eddy.
25. water supply and sanitary engineering-R.C. Rangwala

Bridge course




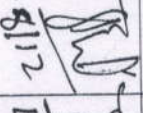
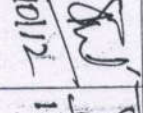
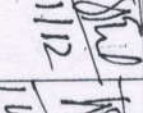
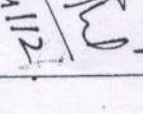
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AURANGABAD-431 004, Maharashtra (India)
DEPARTMENT OF ENVIRONMENTAL SCIENCE
NAAC Reaccredited 'A'



Bridge Course Attendance sheet M.Sc Ist (1st semester) 2021-2022

Sr. No	Name of Students	Dates:	Month : December 2021.																		
			02/12	06/12	07/12	08/12	10/12	11/12	14/12	14/12											
1	ABUJ AJAY SAHADEV		P	-	-	P	P	P	P	P	P										
2	AMBHORE SAMADHAN RAMJI		P	P	P	P	P	P	P	P	P										
3	BHALEKAR VIJAY PANDHARINATH		P	-	-	P	P	P	P	P	P										
4	BUTTE POOJA JANARDHAN		P	-	-	P	P	P	P	P	P										
5	DHABADAGE ANIKET RAMESH		P	-	-	P	P	P	P	P	P										
5	DUBILE GANESH MACHINDRA		P	P	P	P	P	P	P	P	P										
7	GAIKWAD AKANKSHA KASHINATH		P	P	P	P	P	P	P	P	P										
8	GATKAL ANIKET SANTOSH		-	-	-	-	-	-	-	-	-										
9	GORE KIRAN DNYANESHWAR		P	P	P	P	P	P	P	P	P										
10	GUND VANITA DNYANESHWAR		P	P	P	P	P	P	P	P	P										
11	KADAM YUVRAJ SHIVAJI		P	-	-	P	P	P	P	P	P										
12	KAMBLE RAVI VASANTA		P	P	P	P	P	P	P	P	P										
13	KAVHALE MANISHA SHAMRAO		-	-	-	-	-	-	-	-	-										

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		Dates:						
		02/12	06/12	09/12	8/12	10/12	11/12	14/12
14	KHAJEKAR SUVARNA PRAKASH	-	-	-	-	P	P	P
15	KOLHAPURE KETAN AATMALING	P	P	P	P	P	P	P
16	KULKARNI ASAWARI ASHOKRAO	P	P	P	P	P	P	P
17	LEKURWALE PRAGATI DILIPRAO	P	P	P	P	P	P	P
18	NIKHADE HARSHAL DIPAK	P	P	P	P	P	P	P
19	PATIL VISHAKHA SUDHIR	P	-	-	-	P	P	P
20	PATNOORRKA ROHIT SANTOSH	P	P	P	P	P	P	P
21	POTTDAR VIRBHADARA DNYANOBA	P	-	P	-	P	P	P
22	SABLE SUREKHA MAHADEO	P	P	P	P	P	P	P
23	SHINGARE ANUJA PRAMOD	-	P	-	P	P	P	P
24	SUTAR KRISHNA SATISH	P	-	P	P	P	P	P
25	WASADIKAR AMRUTA KAILASH	P	P	P	-	P	-	P
26	WASKAR CHAKRADHAR ASHOKRAO	P	P	-	-	P	P	P
Total Students :-		21	15	15	14	21	19	24
Name and Signature of Teacher								
		02/12	06/12	09/12	8/12	10/12	11/12	14/12