DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
CHHATRAPATI SAMBHAJINAGAR.

CIRCULAR NO.SU/Env.Edu./NEP-2020/23/2024

It is hereby inform to all concerned that, on the recommendation of Faculties Meeting held on 24 November 2023; the **Academic Council at its meeting held on 30 November 2023 has accepted the Syllabus of Value Education Course (VEC): "Environmental Education" for B.A./B.Sc./ B.Com. as Compulsory Course of Two Credits for Common to All Faculties** run at all Affiliated Colleges in this University as per appended herewith.

This is Effective from the Academic Year 2024-25 and onwards.

This Circular also available on University Website WWW.bamu.ac.in

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Chhatrapati Sambhajinagar -
431 004.
REF.NO.SU/2024/3322-30
Date:- 11.07.2024.

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Deputy Registrar,
Academic Section

Copy forwarded with compliments to :-

1] **The Principal of all concerned affiliated Colleges,**
Dr. Babasaheb Ambedkar Marathwada University,
2] **The Director, University Network & Information Centre, UNIC, with a request to upload this Circular on University Website.**

Copy to :-

1] The Director, Board of Examinations & Evaluation, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
2] The Section Officer,[Concerned Unit] Examination Branch, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
3] The Programmer [Computer Unit-1] Examinations, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
4] The Programmer [Computer Unit-2] Examinations, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
5] The In-charge,[E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr.Babasahcb Ambcdkar Marathwada Univcrsity, Chhatrapati Sambhajinagar.
6] The Public Relation Officer, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
7] The Record Keeper, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, CHHATRAPATI SAMBHAJINAGAR

Syllabus of

Environmental Studies

For B.A./B.Sc./B.Com.

(Common across Faculty)

As per National Education Policy - 2020

Effective From the Academic Year 2024-25 & Onwards/-

Syllabus for VEC (Value Education Course)

(Common across Faculty)

Title of the Course: Environmental Studies

Course Objectives

Students will be able to know

1. The management of natural resources and importance of biodiversity in our life.
2. In-situ and ex-situ conservation of biodiversity and endangered and endemic species in India.
3. Renewable energy sources for its sustainable use and green initiatives to be undertaken in future.
4. Management of pollutants through mitigation measures as well as global environmental issues.

Unit-I: Natural Resource Management: **8.Hrs**

i) Air: Composition of Air, Structure and Composition of Atmosphere, Various air pollutants, Effects of air pollution, Air pollution control devices, Air Quality management.

ii) Water: Global Water Balance (GWB), Types of water: Fresh water and Marine water, Surface water sources: Lakes, Streams, Rivers, etc., Underground water sources: Infiltration galleries, Infiltration wells, Types of Lake, (Oligotrophci, Mesotrophic and Eutrophic), Hydrological cycle, Rain water harvesting, 3R's for conservation of water: Reuse, Reduce, Recycle.

iii) Soil: Structure and composition of Soil, Types of Soil, Properties of Soil: Physical and Chemical Soil profile, Formation of Soil, Soil Erosion, Soil pollution Causes and remedies, Nutrients present in soil.

iv) Biodiversity: Definition, Species and ecosystem diversity, Values of biodiversity, Loss of biodiversity, Hotspots of biodiversity, Threats to biodiversity, Endangered and endemic species in India, Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity, Convention on Biological Diversity (CBD)

Unit-II: Sustainable Energy resources and Green Initiatives: **8. Hrs**

A. Sustainable Energy, defining energy, aspects of energy production and consumption, local regional and global environmental effects of energy, fossil fuels and fossil energy, nuclear power, renewable energy, biomass energy, geothermal energy, hydropower solar energy, wind energy, ocean waves, tides and thermal energy conversion, electric power energy, industrial energy usage.

B. Green economy, green jobs, energy economics in ecosystems, green technology and renewable energy efficiency, 10w carbon vehicles, green choices, green living, zero waste creative's, arban gardens, green buildings, green products, green polices, green

future, eco-labeling, ecommerce, green claims, eco-tourism, eco-feminism, electric vehicles.

Unit-III: Environmental Pollution and mitigation Measures: **8.Hrs**

1. General Introduction of Pollutions.
2. Water Pollution: Sources of water pollutions pollution of receiving waters, water quality requirements and monitoring, water pollution status in India, water pollution control / their mitigation.
3. Air Pollution :Sources of Air pollution, effects of air pollutants on human and vegetation, Air pollution control / mitigation studies- Absorphon adsorphan, incineration, condensation, bughouses and filters, electrostatic precipitators, scrubber etc.
4. Solid and Hazardous waste Management: Waste generation and characteristics, current managements practices, Action plan for MSWM, hazardous waste management, biomedical waste management, legal and institutional frame work.
5. Global Environmental Issues Greenhouse effect and control strategies, Ozone depletion and control strategies, acid rain and control strategies, deforestation and control strategies.

Activities to Perform (Any Two): **06 Hrs**

1. Visits to the local heritage sites
2. Identification and Quantification of plants in your city/area/colony.
3. Visits to water reservoirs in your city.
4. Identification of wells and bore wells used for drinking purpose.
5. Survey of Municipal solid waste.
6. Survey of Sewage water drainage system.
7. Cleanliness in your local colony.
8. Reduce, Reuse, recycling of plastic waste/organic waste etc.
9. Visit to water purification treatment plant
10. Survey of playgrounds in your schools or premises
11. Health survey of traffic police
12. Health survey of rag pickers.
13. Identification of bird's status in urban/ rural area.
14. Observation of vegetation in urban / rural area.
15. Identification of major/local environmental Problems in your area.
16. Survey and status of public health centers in your area.
17. Visit to study biomedical waste treatment plant.
18. Survey of biomedical waste generated in private / government hospitals.
19. Social survey of Environmental Awareness/Environmental programmes.
20. Personal Contribution for Environmental Management.
21. Survey/monitoring of noise, crackers, flower waste during festivals.

Course Outcomes:

Students should be able to

1. Identify the status of natural resources and the value of biodiversity.
2. Describe in-situ and ex-situ conservation measures of biodiversity and endangered species in India.
3. Renewable energy use for sustainable green growth such as use low carbon vehicles, green choice and green living.
4. Environmental pollution measures, solid and hazardous waste management and the global environmental issues.

Books Recommended:

1. Principles of Ecology-P.S.Verma and V.K. Agarwal
2. Fundamentals of Ecology-Odum E.P.
3. Principles of Environmental Science-Wart K.E.F.(1973) Mc Graw Hill book Company.
4. Ecology and Environments-P.D.Sharma.
5. Elements of Ecology-P.D.Sharma
6. Ecology-M.P.Arora
7. Basic Ecology-E.P. Odum
8. Concept of Ecology-E.J.Koromondy, 1996, concept of modern biology series, Prentice Hall.
9. Modern Concepts of Ecology-H.D.Kumar
10. Principles of Environmental Biology-P.K.G.Nair, Himalaya Pub. House, Delhi
11. Ecology by N.S.Subrananayam and A VSS Sambamuthy.
12. Basic Ecology - E.P. Odum.
13. Modern Concepts of Ecology- H.D. Kumar.
14. Principles of Environmental Biology - P.K.G. Nair, Himalaya pub. House, Delhi
15. Environmental Biology-P.D. Sharma, Rastogi Publication, Meerut.
16. Ecology and Environment - P.D. Sharma, Rastogi Publication, Meerut.
17. Environmental Science-Enger, Smith, Smith, W.M.C. Brown company publishing.
18. Dr.Satish Patil, (2020) Green Economy, International Publications, Kanpur (ISBN 978-81-945988-9-3).
19. Dr,Satish Patil, Geetanjali Kaushik, Arvind Chel & Shivani Chaturvedi, Biofuels: Advances and Prespectives (2018), Stadium Press India pvt.Lt. (ISBN 93-85046-22-5)
20. Varma, R,S,Advances in Green Chemistry: Chemical Syntheses using Microwave Irradiation, Kavitha printers: Bangalore, india, 2002.
21. Martin Charter and Ursula Tischner Sustainable solution: Developing products and series for the future Greenleaf Publishing.
22. Text book of Environmental Studies (2010): Erich Bharucha, Universities press.
23. Lancaster, M. Green Chemistry: An Introductory Text, Royal Society of Chemistry: Cambridge, 2002.

24. Allent, D.T. and D.R.Shonnard, Green Enginnering: Environmentally conscious desing of Chemical processes, Prentice hall PTR: Upper Saddle River, NJ, 2001.
25. Matlack. A.S. Introduction to Green Chemistry marcel Dekker: New York, NY, 2001.
26. Environmental Science by S.C. Santra, New Central Book Agency, New Dehli.
27. A textbook of Environmental Studies by D.K. Astana S. Chand and Company New Delhi
28. A textbook of Environmental Science by R.N Trivedi, Anmol Publication Pvt Ltd.
29. Soil Pollution and Soil Organism-P.C.Mishra, Ashish Pub. Home.
30. Soil Conservation-Norman Hudson, IInd Ed, and English language book Soc.
31. Soil and Water Conservation-Resurges, Standard Pub. And distributor.
32. Waste and waste water engineering by R.C Rangwala.
33. Waste and waste water engineering (Vol. II) by Fair/Geyer/Ocun.
34. B.K Sharma - Environmental chemistry-Goel publication.
35. A.K. De - Environmental Chemistry.
36. Tyagi and Mehra - Environmental Chemistry.
37. Trivedi P.R & Raj Gurdeo - Environmental water and soil Analysis, Akasdeep Pub. House, New Delhi.
38. V.K.Alhuwalia, Environmental Chemistry Ahe books, India.
39. S.P. Misra and S.N. Pandey - Essential Environmental studies- Ane books Pvt. Ltd.
40. Abbasi.S.A. 1998. Environmental pollution and its control. Cogent International, Pondichery.
41. Gosh. Environmental Pollution.
42. Rajvaidya. Environmental pollution control.
43. Agarwal. Water pollution
44. Khopkar. Environmental Pollution.
45. Daneil.A. Vallero. Environmental contamination Assessment and control.
46. A.K.tripathi, S.N.Pandey, Water Pollution.