



**Maharashtra Education Society**

**Abasaheb Garware College**

**(Autonomous)**

*(Affiliated to Savitribai Phule Pune University)*

**Syllabi under Autonomy**

**Ability Enhancement Compulsory Course- (AECC - Environment Awareness)**

**For Undergraduates (For all faculties - Second year)**

**To be implemented from Academic Year 2022-2023**

**Syllabus Ability Enhancement Compulsory Course (AECC–Environment Awareness)**

**UEVS-231: (AECC–Environment Awareness)**

**(2 credit)**

**for undergraduate (For All Faculties-Second Year -Semester III)**

**It is as per UGC guidelines and framing**

**Unit1: Introduction to environmental studies**

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

**(3 lectures)**

**Unit2: Ecosystems**

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem : food chains, food webs and ecological succession. Case studies of the following ecosystems :

- a) Forest ecosystem
- b) Grassland ecosystem
- c) Desert ecosystem
- d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

**(9 lectures)**

**Unit3: Natural Resources: Renewable and Non-renewable Resources**

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over-exploitation of surface and ground water, floods, droughts conflicts over water (international & inter-state).
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

**(12 lectures)**

**Unit4: Biodiversity and Conservation**

- Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-

situ conservation of biodiversity.

- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.

(12 lectures)

**References:**

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
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5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M. K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
9. Odum, E. P., Odum, H. T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I. L., Gerba, C. P. & Brusseau, M. L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M. N. & Datta, A. K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P. H., Hassenzahl, D. M. & Berg, L. R. 2012. *Environment*. 8<sup>th</sup> edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. Tripathi 1992.
14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
15. Singh, J. S., Singh, S. P. and Gupta, S. R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N. S., Gibson, L. & Raven, P. H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WBSaunders.
19. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.

**SyllabusAbilityEnhancementCompulsoryCourse(AECC–EnvironmentAwareness)**

**UEVS-241:(AECC–EnvironmentAwareness)**

**(2credit)**

**forundergraduate(ForAllFaculties-SecondYear-SemesterIV)**

**ItisasperUGCguidelinesandframing-**

**Unit5:EnvironmentalPollution**

(12lectures)

- Environmental pollution:types,causes,effects andcontrols;Air,water,soilandnoise pollution
- Nuclearhazards andhumanhealthrisks
- Solidwastemanagement:Controlmeasures ofurbanand industrialwaste.
- Pollutioncasestudies.

**Unit6:EnvironmentalPolicies&Practices**

(11lectures)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on humancommunities andagriculture
- EnvironmentLaws:EnvironmentProtectionAct;Air(Prevention &ControlofPollution)Act; Water(Preventionand controlofPollution)Act;WildlifeProtection Act;ForestConservationAct.International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity(CBD).
- Naturereserves,tribalpopulationsandrights,andhumanwildlifeconflictsinIndiancontext.

**Unit7:HumanCommunitiesand theEnvironment**

(7lectures)

- Humanpopulationgrowth:Impactsonenvironment,human healthandwelfare.
- Resettlementandrehabilitation ofprojectaffectedpersons;casestudies.
- Disastermanagement:floods,earthquake,cyclonesandlandslides.
- Environmentalmovements:Chipko,Silentvalley,Bishnoisof Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmentalconservation.
- Environmentalcommunicationandpublicawareness,casestudies(e.g.CNGvehiclesinDelhi).

**Unit 8: Field work**

**(Equal to 6 lectures)**

- Visittoanareatodocumentenvironmentalassets:river/forest/flora/fauna,etc.
- Visittoalocalpollutedsite-Urban/Rural/Industrial/Agricultural.
- Studyofcommonplants,insects,birdsandbasicprinciplesofidentification.
- Studyofsimpleecosystems-pond, river,DelhiRidge,etc.

**References:**

1. Carson,R.2002.SilentSpring.HoughtonMifflinHarcourt.
2. Gadgil,M.,&Guha,R.1993.ThisFissuredLand:AnEcologicalHistoryofIndia.Univ.ofCaliforniaPress.
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14. Sengupta,R.2003.Ecology andeconomics:Anapproachtosustainabledevelopment.OUP.
15. Singh,J.S.,Singh,S.P.andGupta,S.R.2014.Ecology,EnvironmentalScienceandConservation.S.ChandPublishing,NewDelhi.
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19. Wilson,E.O.2006. TheCreation:Anappealtosavelifeonearth.NewYork:Norton.
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