RAJA NARENDRA LAL KHAN WOMEN'S COLLEGE (AUTONOMOUS)

AECC (Ability Enhancement Compulsory Course)
ENVIRONMENTAL STUDIES [4 credits]

Under Graduate Syllabus
(for CBCS Pattern)
w.e.f. 2018-2019
Draft Syllabus

Gope Palace, Midnapore 721 102
West Bengal

AECC - ENVIRONMENTAL STUDIES [4 credits]

For Under Graduate courses of all branches
(Arts, &Science)
Full Marks -100, Written Examination: 50 Marks,
Project Report: 40 Marks, Internal Marks:10

Question Pattern and Distribution of marks for Written Examination:

Time: 2 Hours **F.M. 50 Marks**

Type 1: Short Answer Type -10 questions (out of 15) x 2 = 20 Marks
Type 2: Semi long Answer Type-4 questions (out of 7) x 5 = 20 Marks
Type 3: Long Answer Type-1 question (out of 2) x 10 = 10 Marks

Detailed Draft Syllabus

Ability Enhancement Compulsory Course (AECC – Environmental Studies)

Environmental Studies **Credits: 4 (Total Marks: 100)**

Unit 1: Basic Concept in Environmental Studies

- Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development.
- Concept of 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) Aquatic ecosystems (ponds & rivers)

Unit 3: Natural Resources: Renewable and Non---renewable Resources

- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Joint forest management.
- 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.

Unit 4: Biodiversity and Conservation

- Levels of biological diversity : genetic, species and ecosystem diversity; Bio-geographic 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.

Unit 5: Environmental Pollution

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.

Unit 6: Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

Unit 7: Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare.
- Disaster management: floods, earthquake, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.

Unit: 8 Project work: on the *maintenance of ecosystem and beautification of the allotted plot* within the college campus

1. The Project work has to do within the college campus on the allotted area/plot
2. The Project work has to complete within the EVS Practical classes
3. The Project report has to submit in A-4size Practical Notebook
    a. **Introduction**: stating the location of the plot and its present condition. Photograph of the plot at its initial stage has to be given along with the group of students working in the plot
    b. **Daily records**: Daily record of individual work duly signed by the respective mentors has to be documented in the practical notebook. Photographs may be given showing the nature of progress of the work
    c. **Conclusion:** state your contribution mentioning the changes that has been made by you. Attached photographs as proof.
4. The daily work will be assessed individually and on the basis of the daily assessment, total marks of individual student will be given. There will be no separate evaluation for Project work.
5. The report should be preserved in the respective departments for future record.

Suggested Readings:

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.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
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*. 8th 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*. WB Saunders.
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.