University Grants Commissions

ENVIRONMENTAL STUDIES

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

This module consists of 3 units, covering 45 hours of classroom based and field work intended to create awareness, enhance knowledge, develop skills and attitudes necessary to understand the Environment in its totality and enables students to participate proactively for the cause of the environment.

1. Environmental Studies (AECC) is made compulsory core module syllabus framed by UGC for all the Indian Universities/Colleges as per the directions given by the Honorable Supreme Court, which believed that, conservation of environment should be a national way of life and to be included into the education process. As suggested by State Level Environmental Science Subject Expert Committee, Chairpersons of Board of Studies, Board of Examiners and subject experts it is proposed to implement the details listed in the tabular column below, **mandatorily**.

Environmental Studies (AECC) - Ability Enhancement Compulsory Course		**Semester in which the course is to be taught**
Streams	**B.Sc/B.A/B.C.A/B.S.W/B.F.A and other streams of Humanities and Science**	**I**
	B.Com, /B.B.A/BBA (T&T)/BFT and other streams of Commerce and Management	**II**

2. This pattern helps in distributing the workload of teachers of Environmental Studies to both **I and II semesters** enabling the distribution of the **teaching workload of an institution for full academic year**; ensures distribution of examinations into two semesters; also provide scope for a full-time teacher of the subject.

3. **Qualifications to teach Environmental Studies (AECC):** A candidate with minimum qualifications of M.Sc. in Environmental Science subject is eligible to teach Environmental Studies (AECC) at the under graduate level at all Universities, Deemed to be Universities, Autonomous Institutions, Government, Aided and Private Colleges. Preference be given to candidates with UGC-NET/K-SET/Ph.D. in Environmental Science.

However, when such candidates are not available, teachers of the subjects listed below are to be preferred to teach **ENVIRONMENTAL STUDIES – AECC** paper in the following order:

i. **Biological Sciences**:
Botany/Zoology/Microbiology/Biotechnology/Life Sciences

ii. **Chemical Sciences and Earth Sciences**:
Chemistry/Geology/Earth Sciences

The teachers **NOT ELIGIBLE** to teach Environmental Studies (AECC) paper are - Humanities (Economics, Geography, History, Sociology, Political Science, Rural Development, Philosophy and others), Commerce, Management, English & others languages, Communication, Performing Arts, Fine Arts, Social work, Women Studies, Psychology, Home Science, Fashion Technology, Travel & Tourism and other similar subjects.

4. **Pattern of Examination**: Total marks – **100** (Formative Assessment - 40 marks and Term End Examination - 60 marks).

I. Summative Marks distribution

Formative Assessment	
Assessment Occasion/Type	**Weightage in Marks**
Assessment Test – 1	10
Seminar/Field work/Group discussion	10
Assessment Test – 2	10
Assignment/seminar/project or field work	10
Total	**40**

II. Term End Examination: Paper will be for maximum of 60 marks. The minimum mark to pass the examination is 35% (21 marks).

Section – A: Multiple Choice Questions

Section – B: Short Answer Questions

Section – C: Essay type Questions

5. **Duration of the Term End Examination**: Two hours

6. **Teaching hours and credits**: 3 hours of teaching per week and 3 credits.

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ENVIRONMENTAL STUDIES

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

Total Contact Hours: 45	Course Credits: **3**
No. of Teaching Hours/week: **3**	Duration of ESA/Exam: **2** Hours
Formative assessment Marks: **40**	Semester end assessment Marks: **60**

Content of ENVIRONMENTAL STUDIES – AECC		**45 Hours**
Unit 1	**Chapter 1: Introduction to Environmental Studies:** • Multidisciplinary nature of environmental studies. • Scope and importance; Concept of sustainability and sustainable development.	**2**
	Chapter 2: 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)	**6**
	Chapter 3: 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.	**7**
Unit 2	**Chapter 4: Biodiversity and Conservation** • Levels of biological diversity: Genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hotspots. • India as a mega-biodiversity nation; Endangered and endemic species of India.	**8**

	• 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.	
	Chapter 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. • Pollution case studies.	**7**
Unit 3	**Chapter 6: Environmental Policies and 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.	**7**
	Chapter 7: Human Communities and the Environment • Human population growth: Impacts on environment, human health and welfare. • Resettlement and rehabilitation of project affected persons; case studies. • 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. • Environmental communication and public awareness, case studies (e.g., CNG vehicles in cities).	**6**
	Chapter 8: Field work (Any two) • Visit to an area to document environmental assets: river/forest/flora/fauna, etc. • Visit to a local polluted site- urban/Rural/Industrial/ Agricultural. • Study of common plants, insects, birds, and basic principles of identification. • Study of simple ecosystems – pond, river, Delhi ridge, etc.	**2**

Reference

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11. Pepper, I.L, Gerba, C.P. & Brusseau, M.L. (2011). Env*ironmental and Pollution Science*. Academic Press.
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Question Paper Pattern for AECC Environmental Studies – NEP - 2020

Time: 3 Hours **Total marks:60**

Section – A: Multiple Choice Questions **(10 x 2 = 20)**

I. Answer all the questions

1. a.
   b.
   c.
   d.
   e.
   f.
   g.
   h.
   i.
   j
   k
   l

Section – B: Short Answer Questions

II Answer any five questions. **(5 x 4 = 20)**

2.
3.
4.
5.
6.
7.
8.

Section – C: Esay type Questions **(2 x 10 = 20)**

III. Answer any two questions.

9.
10.
11.
12.