FACULTY OF LIFE SCIENCES

SYLLABUS FOR THE

SUBJECT: ENVIRONMENTAL STUDIES

(COMPULSORY PAPER) (VALUE ADDED COURSE)

for the award of the Degree in

BACHELOR OF ARTS/ BACHELOR OF SCIENCE

(Offered under 3-year UG Degree Programme)

(Credit Based Grading System)
under NEP 2020

Batch: 2025–28

GURU NANAK DEV UNIVERSITY AMRITSAR

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(ii) Syllabi are subject to change at the discretion of the authority. Please visit the University website from time to time.

Bachelor of Arts/Bachelor of Science Environmental Studies (Compulsory Paper)
(Value Added Course) (CBGS) (under NEP 2020) (Batch 2025-28) (Semester-III)
(Faculty of Life Sciences)

SCHEME

ENVIRONMENTAL STUDIES (COMPULSORY PAPER)

(VALUE ADDED COURSE)

SEMESTER - III

Sr. No.	Course Code	Course Title	Credits L-T-P	Total Marks
1.	ESL 222	ENVIRONMENTAL STUDIES (COMPULSORY PAPER) (VALUE ADDED COURSE)	2-0-0	50

Bachelor of Arts/Bachelor of Science Environmental Studies (Compulsory Paper)
(Value Added Course) (CBGS) (under NEP 2020) (Batch 2025-28) (Semester-III)
(Faculty of Life Sciences)

SEMESTER-III

ESL222 : ENVIRONMENTAL STUDIES (COMPULSORY PAPER)

(VALUE ADDED COURSE)

Time: 3 Hrs. **L-T-P**
Credits : 2-0-0
Max. Marks : 50

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Note : As per the decision of the Academic Council meeting dated 17-01-2022, Item : 'X', atleast one visit is compulsory for students in the Pushpa Gujral Science City, Kapurthala during the entire course.

(i) ADVISORY FOR PUSHPA GUJRAL SCIENCE CITY, KAPURTHALA:
The Under Graduate **regular students** studying Environmental Studies (Compulsory Paper for All UG College Courses) may be taken to Pushpa Gujral Science City, Kapurthala during the course.

(ii) The **private students** are exempted from the Visit.

SECTION-A

1. The multidisciplinary nature of environmental studies
- Definition, scope and importance, Need for public awareness

2. Natural Resource and associated problems
- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
- Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
  a) Role of an individual in conservation of natural resources.
  b) Equitable use of resources for sustainable lifestyles.

SECTION-B

3. Ecosystems

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

4. Biodiversity and its conservation

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: *In-situ* and *Ex-situ* conservation of biodiversity

SECTION-C

5. Environnemental Pollution

- Définition, causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

6. Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Public awareness

SECTION-D

7. Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health

8. Introduction to Environmental Laws, Environmental Audit and Impact Assessment

- Constitutional provisions- Article 48A
- Article 51A(g) and other derived environmental rights
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Environmental risk assessment Pollution control and management
- Waste Management- Concept of 3R (Reduce, Recycle and Reuse)
- Ecolabeling /Ecomark scheme

Course Objectives:

At the end of this course, the students should be able to understand the scope and importance of environmental studies, different natural resources (forests, minerals, energy, water, land, food, biodiversity) and their utilization as well as conservation methods; importance of ecosystem structure and function; different types of environmental pollution (air, water, soil, thermal, nuclear and noise), Environmental Law and remedial methods. The students will also have to be introduced to various Acts and Last but not least the students should be made aware of the consequences of population explosion; diseases such as HIV/AIDS and various family welfare programs.

Learning Outcome:

- The present subject will help the student to gain knowledge about the effects of environmental pollution and remediation.
- Visiting to a local polluted site (including urban / rural / industrial / agricultural) will help to students to identify the causes, effects and remedial measures.
- After understanding the role of individual in conservation of environment, every individual would be able to follow the sustainable lifestyle patterns.
- The knowledge on environmental protection Acts and Rules will give them valuable glance on legal aspects towards conservation of environment.

References:

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
2. Down to Earth, Centre for Science and Environment, New Delhi.
3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.
4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.
7. Sharma, J. P., Sharma. N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.
8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.
9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi
10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi.